

24 Feb 1886
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SYNOPSIS

OF A 9510

COURSE OF LECTURES

ON

ANATOMY and PHYSIOLOGY.

By BUSICK HARWOOD, M. D. F. R. S. & S. A. ✓

PROFESSOR OF ANATOMY

IN THE UNIVERSITY OF CAMBRIDGE.

THIRD EDITION.

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M DCC XCII.

T O
RICHARD FARMER, D.D.

MASTER OF EMMANUEL COLLEGE

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THE FOLLOWING

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COURSE OF LECTURES

O N

Anatomy and Phyfiology,

IS MOST RESPECTFULLY INSCRIBED,

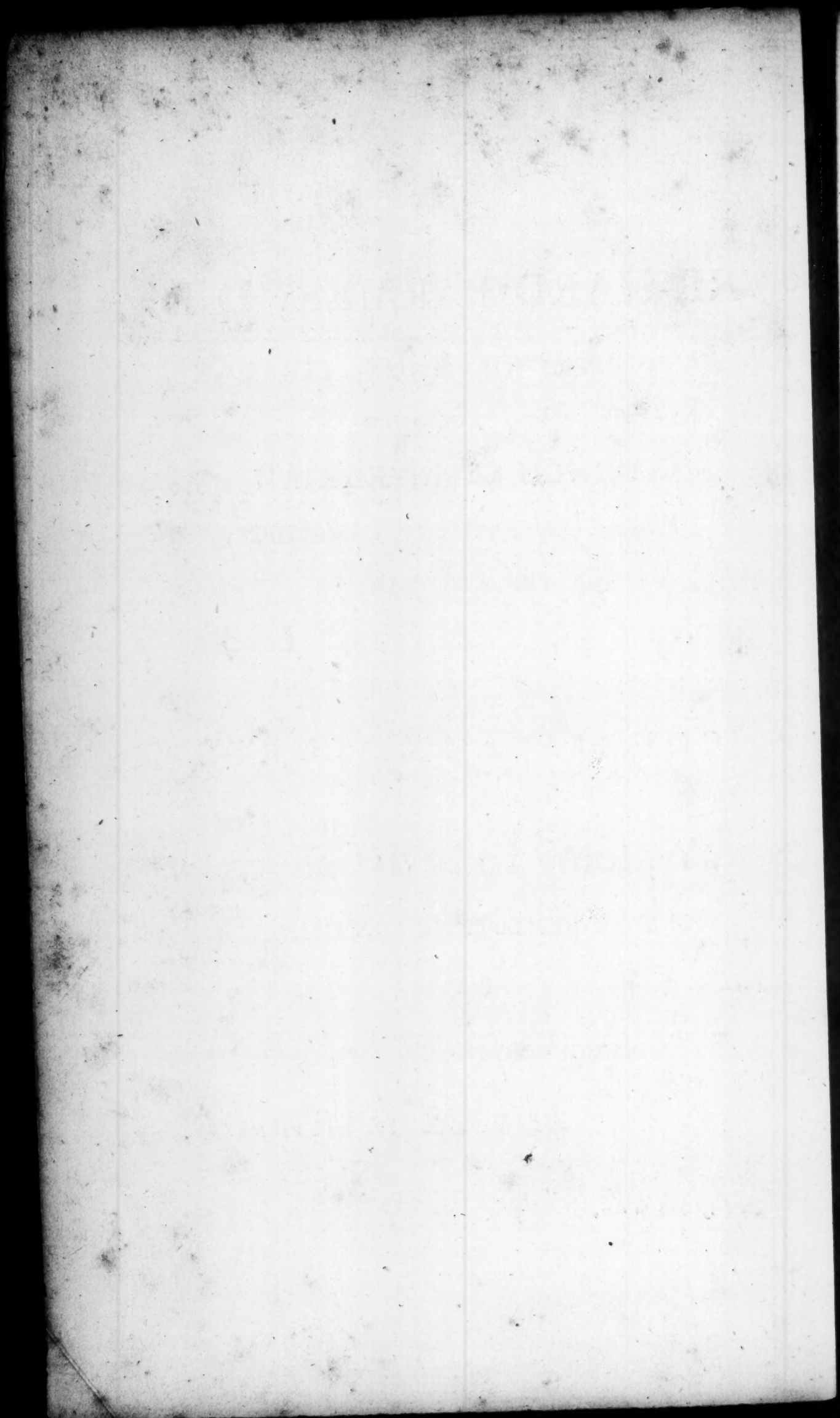
B Y

HIS MOST OBEDIENT HUMBLE SERVANT,

BUSICK HARWOOD.

EMMANUEL COLLEGE,

1st Feb. 1792.



ADVERTISEMENT.

HAVING found that the COMPENDIUM ANATOMICUM made use of by my predecessor, was insufficient to answer all the purposes of the more enlarged plan, which I have ventured to adopt in the delivery of anatomical lectures; I have been led to attempt the composition of a Syllabus, which I hope will convey a more perfect idea of the subjects I intend to enlarge upon in the ensuing course.

With regard to the order, in which I have chosen to arrange the different articles of this Syllabus, I have adhered as nearly to that in which they will be treated of at the lectures,

as

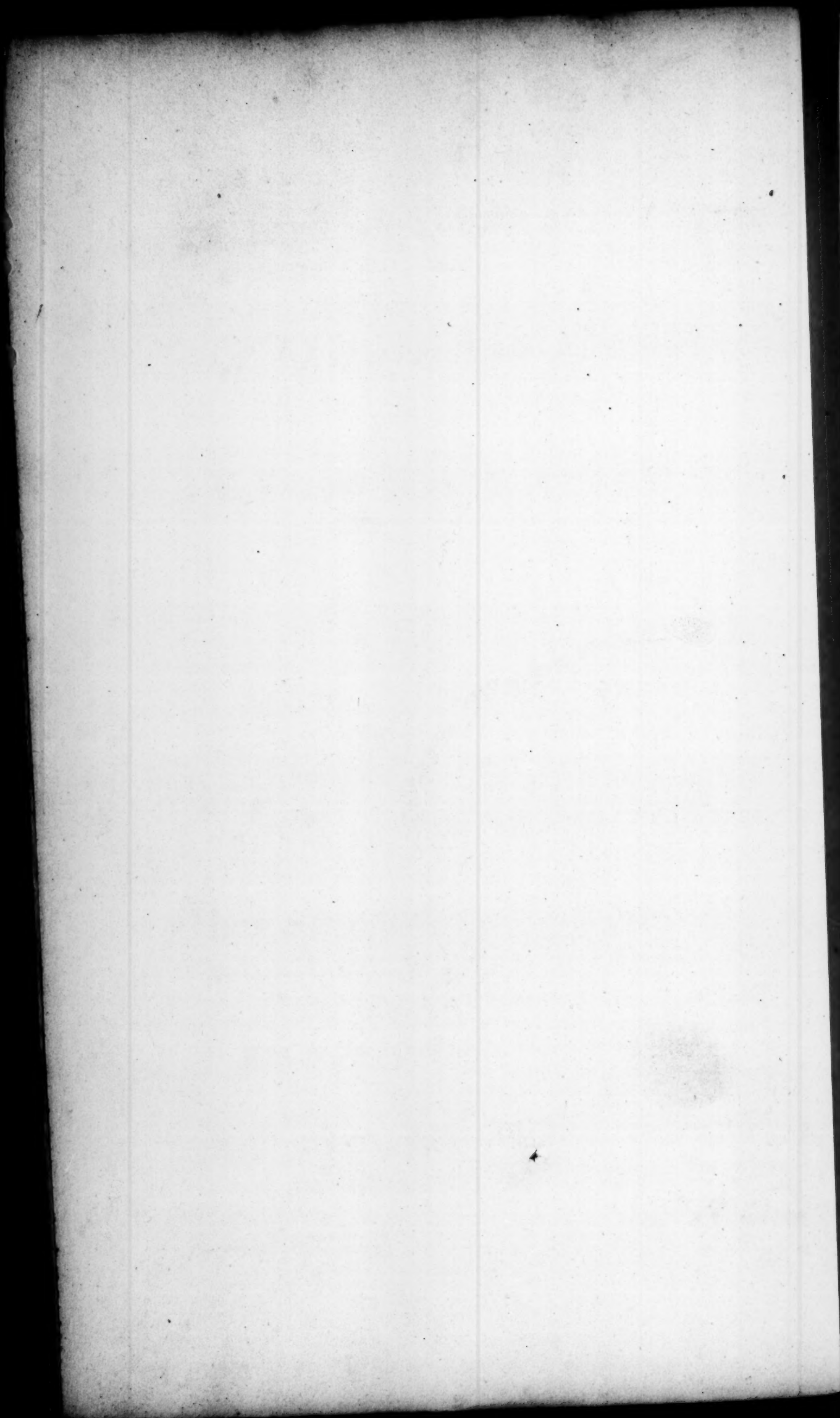
as the nature of the undertaking would admit. And to remedy the inconvenience, which might arise from any occasional breach in this order, I have avoided the division of it into separate lectures, and have prefixed numbers to each article, by which means they may be referred to at pleasure. The number of articles has also been reduced into as small a compass as possible, by omitting the enumeration of the Bones and Muscles, a catalogue of which will be found at the end of the Syllabus.

Besides the more immediate purpose for which the following pages were designed, I am not without hopes that an attempt (which as far as I know is the first,) to collect and arrange the principal facts, and discoveries in Anatomy, may be of use to other Teachers of the art, who may possibly think it worth while to extend and improve the plan which I now offer to the Public.

After the Anatomy of the human body is completed, it is likewise my intention to give
some

some separate lectures on the structure of Animals. And in the division of the subject, all those Analogies which assist us in explaining the structure and uses of the Animal Œconomy, will be particularly pointed out.

The articles which compose this part of the Syllabus, are comprised under the general head of *Comparative Anatomy*.



INTRODUCTION.

History of Anatomy.

1. **R**ISE, progress, and present state of the science.
Of its general utility.
2. Of the various kinds of preparations made use of, in investigating the more obscure parts of the human frame.
3. Explanation of the instruments, and the manner of using them, for the purpose of preparing, and preserving, the different parts of an animal body.
4. Necessary cautions concerning the use of anatomical preparations.

A

5. Explica-

5. Explication of the general terms of Anatomy.

Of the Nature, and Properties of the
B L O O D.

6. Recent blood appears like an homogeneous fluid.

Of the means employed to discover its composition.

Of the separate Parts of the Blood.

SERUM.

7. The properties and use of this fluid.

Saline particles contained in it.

CRASSAMENTUM.

8. Composed of two parts.

Separation of these parts by washing in water.

Particular

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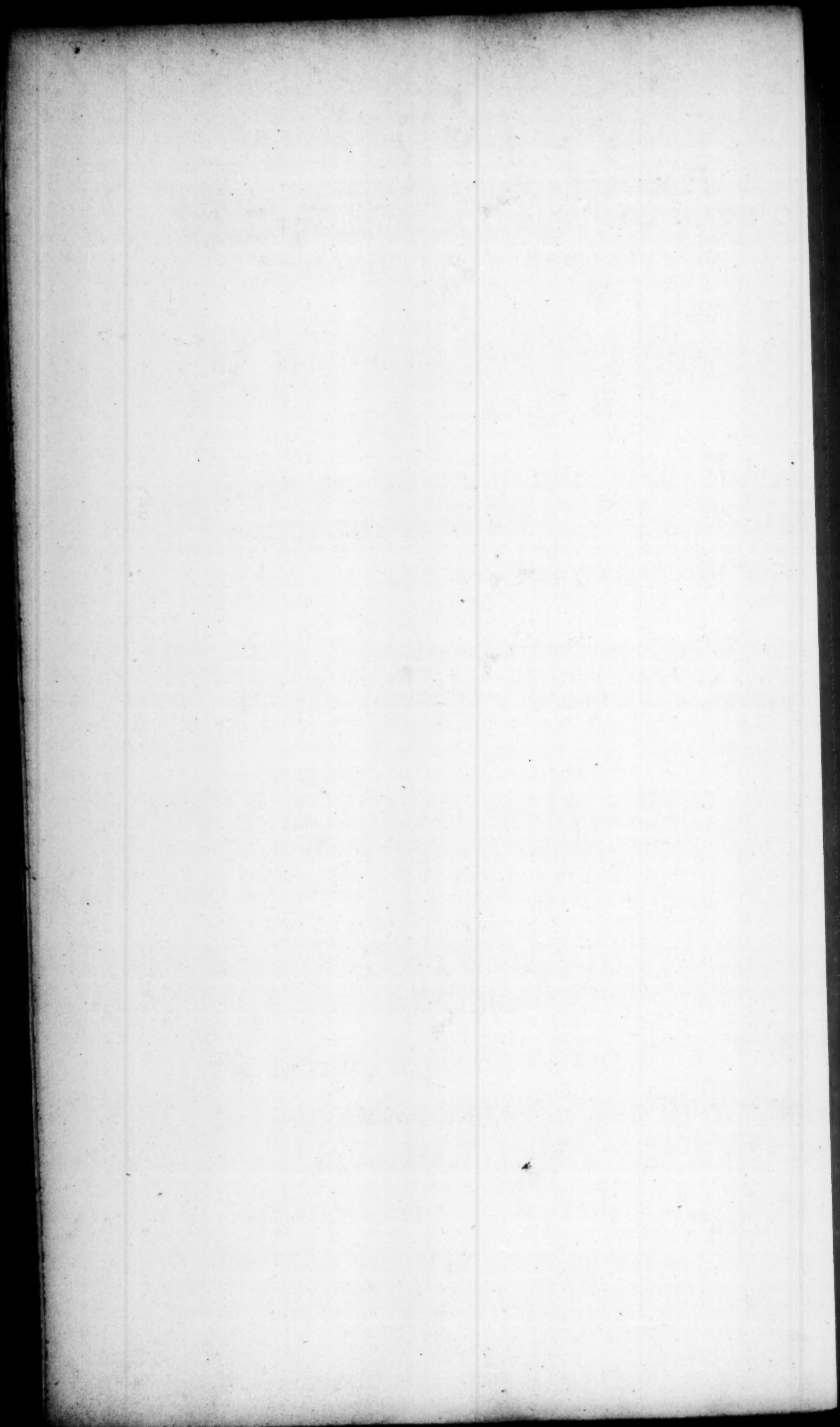
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Particular Examination of each.

RED GLOBULES.

9. Supposed cause of their red colour.

Various opinions concerning their nature and formation.

Microscopic observations, &c.

10. Theories of Lewenhoec, Hewson and others.

COAGULABLE LYMPH.

11. Its peculiar properties.

Is the cause of the spontaneous separation of the blood into two parts.

12. Theory of the formation, and regeneration of parts, by means of the *Coagulable Lymph*.

13. Morbid appearances of the blood.

14. Difference between arterial and venous blood.

A 2

15. Priestly's

15. Priestly's doctrine, and experiments.
16. Human blood compared with that of animals.

History of Transfusion.

17. Method of performing the operation.
18. Effects of *Transfusion* on various animals.

General Divisions of the Human Body.

19. Hippocrates's division into CONTINENTES, CONTENTÆ & IMPETUM FACIENTES.

Other divisions of the antients.

OF ANIMAL FIBRES.

20. Their structure.
Infinite divisibility of an animal fibre.

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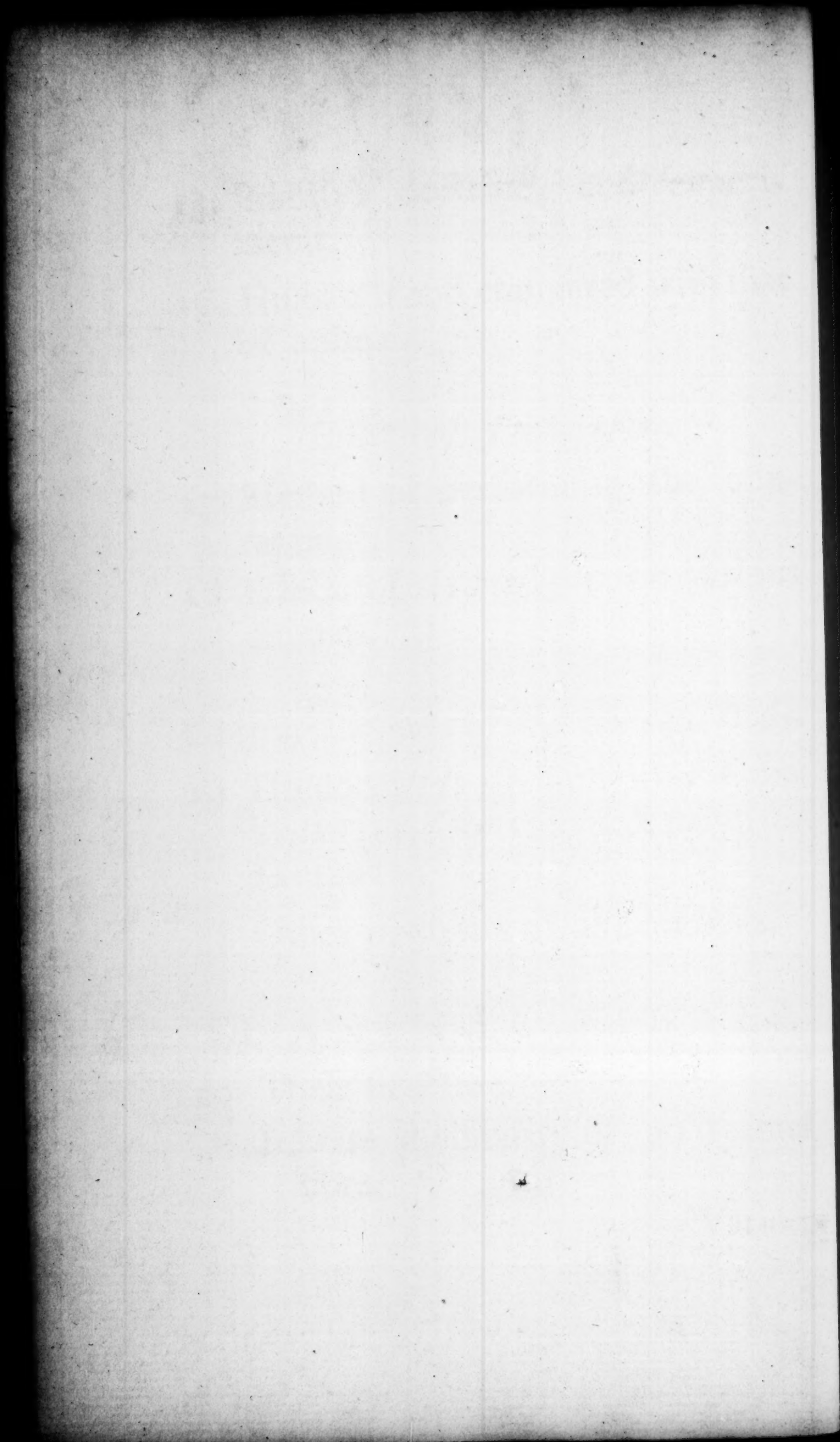
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Various kinds of fibres.

Their gradual increase and elongation.

21. Observations on the preternatural growth of giants.

22. Of wounds in general.

23. Cicatrices how formed.

Of MEMBRANES.

24. General idea of their structure and various use.

Their different degrees of sensibility, in a healthy, and in a morbid state.

Of B O N E S.

25. The beginning and progress of *Ossification*.

Of the variety of this process in the flat, cylindric, and spherical bones.

26. General structure of bones.
Cancelli how formed.

Remarks

Remarks on the growth of bones.

27. Chemical analysis of bone.

28. Of the varieties in the shape and substance of bones.

Of the comparative strength of bones.

29. Of their nerves and blood-vessels.

Exquisite sensibility of bones in some diseases.

Evident effect of diet on the bones.

Of the bones of animals fed on Madder.

30. External conformation of the bones.

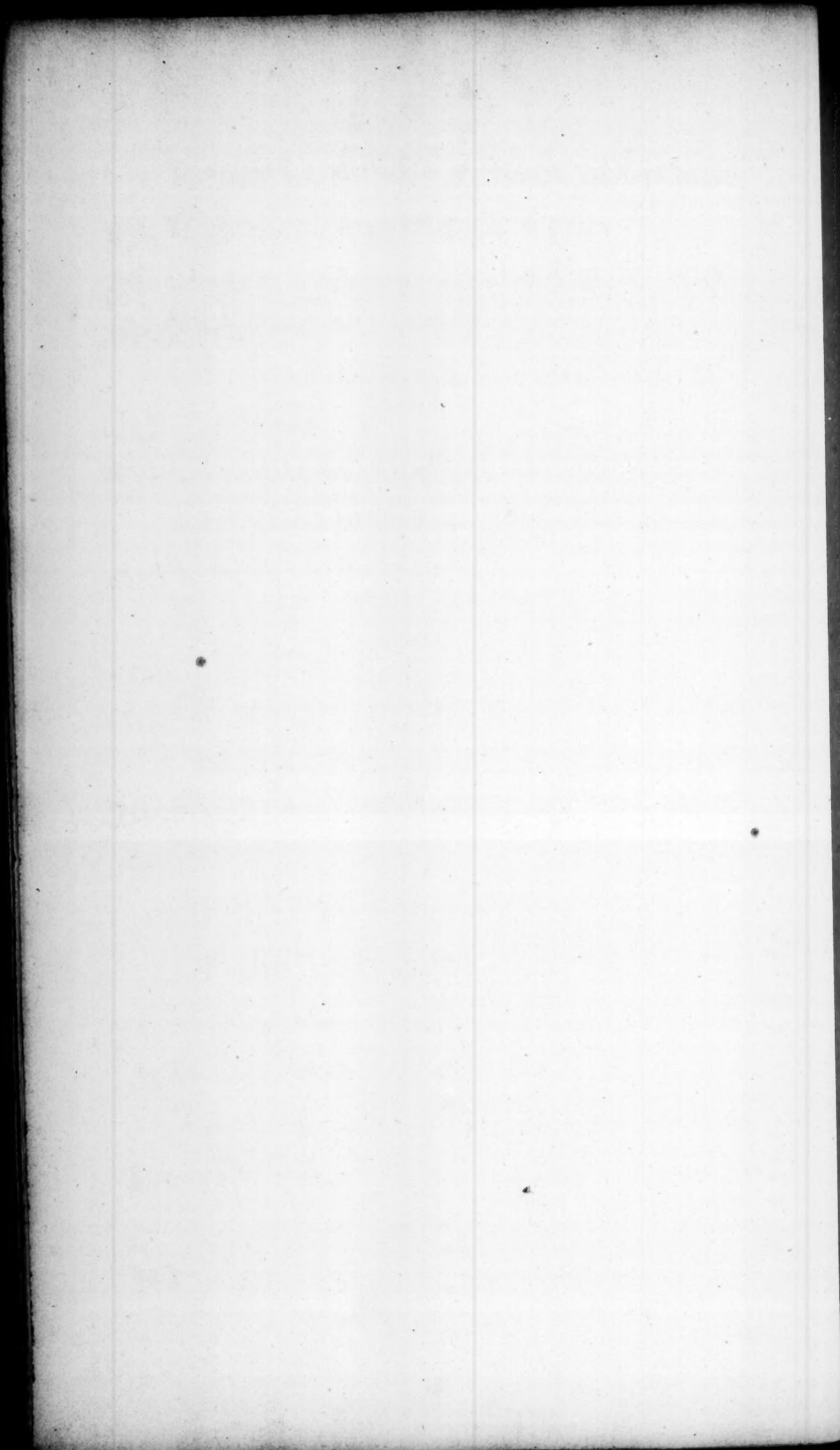
Apophyses, Epiphyses, &c.

Of the PERIOSTEUM.

31. Manner in which it is connected to the bones.

Texture and uses of this membrane.

Of



Of the MARROW.

32. Its nature and use.

Increase of its sensibility in disease.

33. Of the *pori medullares*.

Remarks on the curious distribution of these pores.

34. Diseases of the bones.

35. General effects of the *Lues Venerea* upon them.

Exhibition of the different appearances produced in them by this disease.

36. Remarks concerning the treatment of simple and compound fractures.
Callus how formed, &c.

37. Use of the bones in general.

Of CARTILAGES.

38. Their situation and manifold uses.

39. Difference of their structure.

40. Are classed under three general heads.

41. Of

41. Of the Perichondrium, and its use.

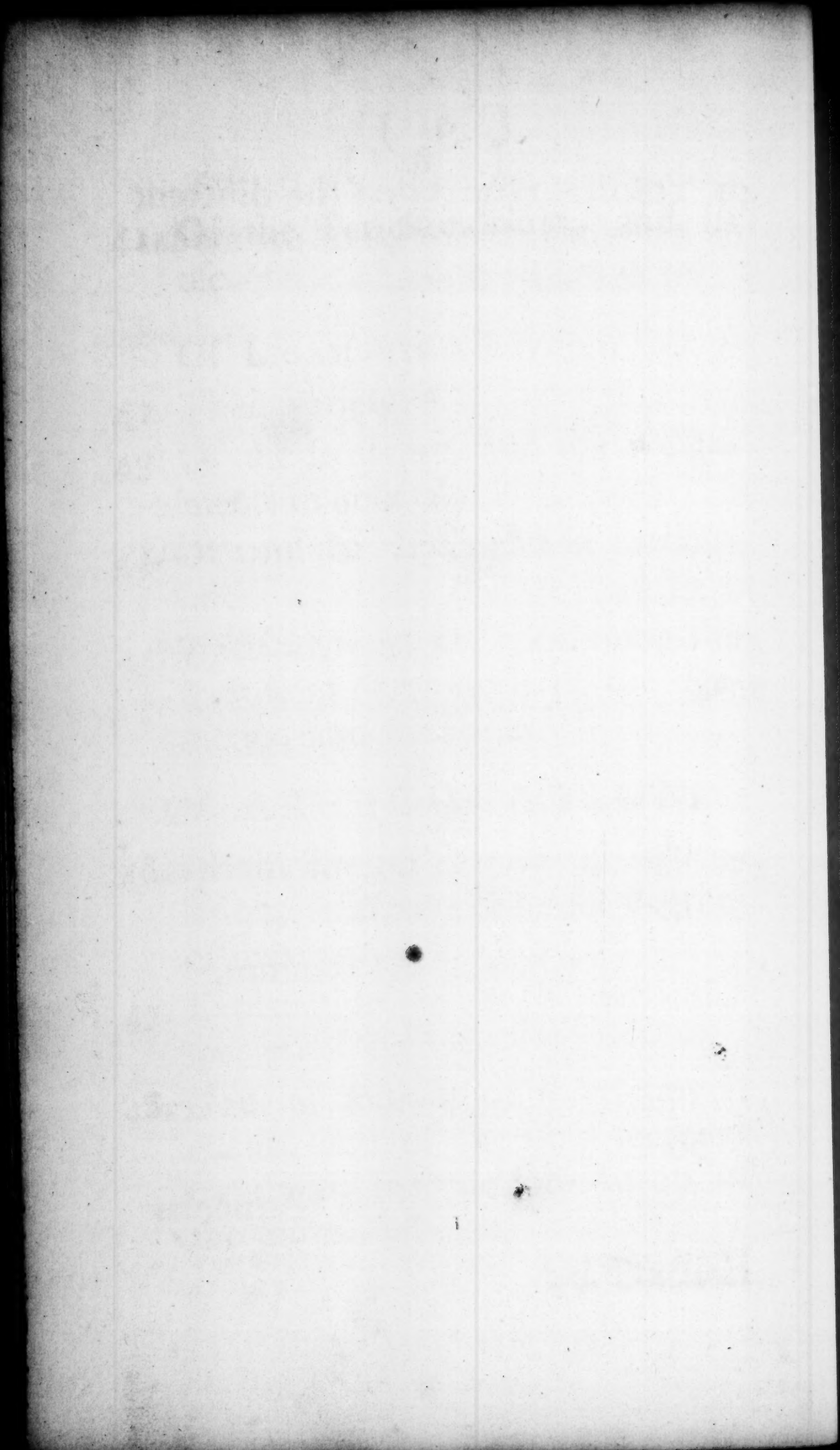
OF LIGAMENTS.

42. Their variety. •
43. Of the structure, and use of ligaments in general.
44. Of capsular ligaments in particular.
45. Practical remarks concerning the treatment of wounds of the ligaments, and cartilages.

OF ARTICULATION.

46. Of the several species of articulation, admitting different degrees of motion.
47. Explanation of each particular species.
48. General account of the synovial glands, and of the fluid secreted by them, for the lubrication of the joints.

49. Practical



49. Practical remarks on the different kinds of luxations, and the modes of reducing them.
50. Of Anchylosis.

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51. Of the different kinds of Skeletons, and methods of preparing them.
52. General division of the Skeleton.
- * *Bones of the Head, Trunk, and Extremities, separately considered.*

Of the CRANIUM.

53. Natural figure, size, and unequal thickness of the skull.
54. Of the tables of the cranium.

Of the diploë and its uses.

55. The skull composed of several bones.

B

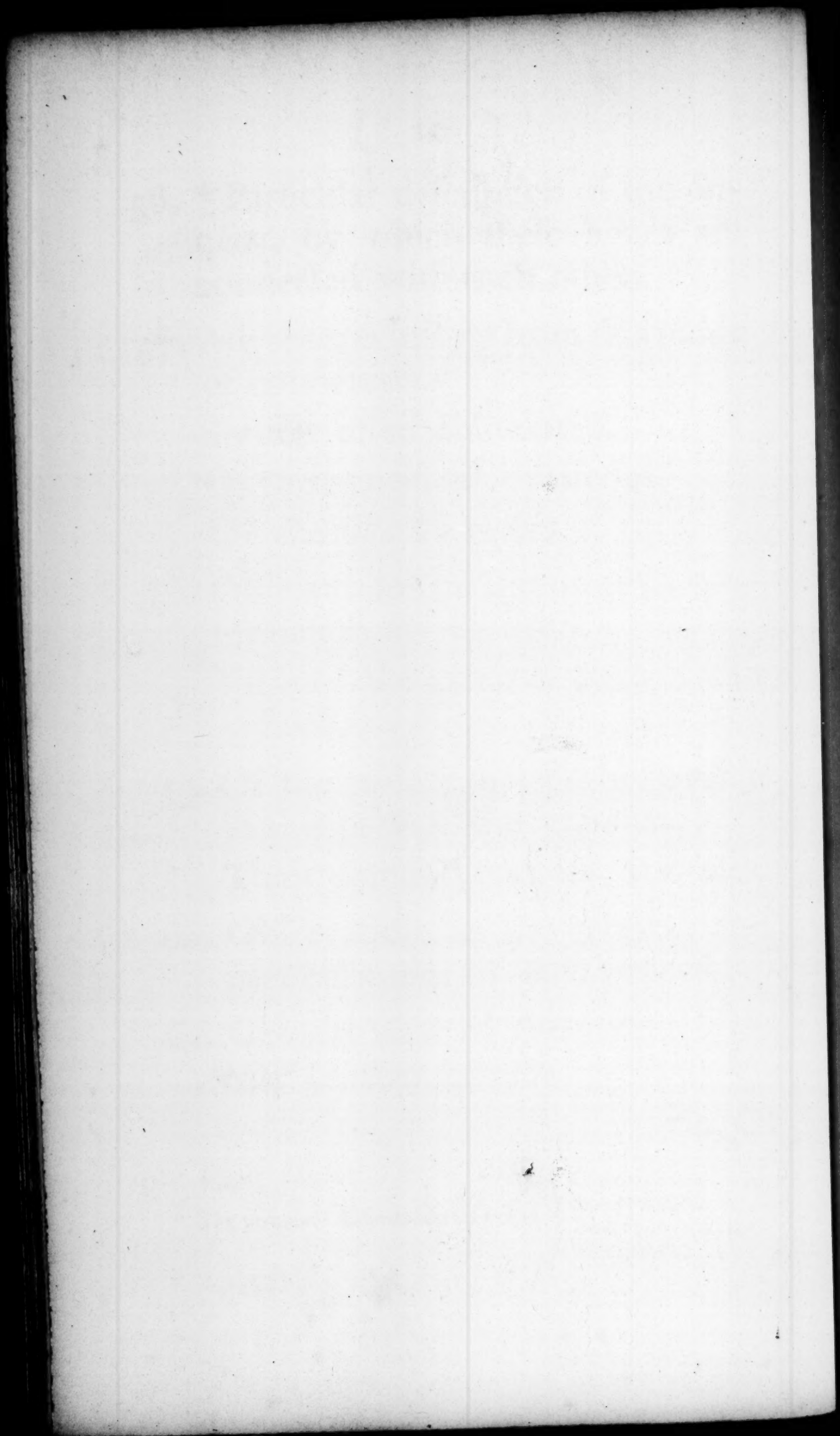
56. *Particular

* See a Catalogue of the bones of the Human Skeleton, at the end of this Syllabus.

56. * Particular description of the *Sutures*, by which these bones are connected with each other.
57. Advantages arising from this mode of connexion.
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Of their accidental varieties.
Of the *Ossa Triquetra*.
58. Observations on the original conformation of the skull.
View of the external basis of the skull.
59. Of the various *processes* observable in this part of the cranium.
Their names, situations, and uses.
60. Observations on the general, and particular uses of each process.
61. General view of the internal cavity of the cranium.

62. Of

* The principal Sutures are SUTURA { CORONALIS.
SAGITTALIS.
LAMBDOIDALIS.
SQUAMOSA.



62. Of the various impressions, pits, and furrows in this cavity.

Marks of the longitudinal, and lateral sinus's, &c.

63. Division of its internal basis.

64. Description and use of the *Proces-
ses*, &c. in the cavity of the skull.

65. Remarks on the attachment of the *Dura Mater*.

66. Of the different *foramina*, for the passage of blood-vessels and nerves.

Observations on the use of each.

67.^a Remarks on the entrance of the *carotid* and *vertebral* arteries into the skull.

68. Of fractures of the skull.

Of concussions.

Operation of the trepan, when necessary and how performed.

Cautions to the surgeon in performing this operation.

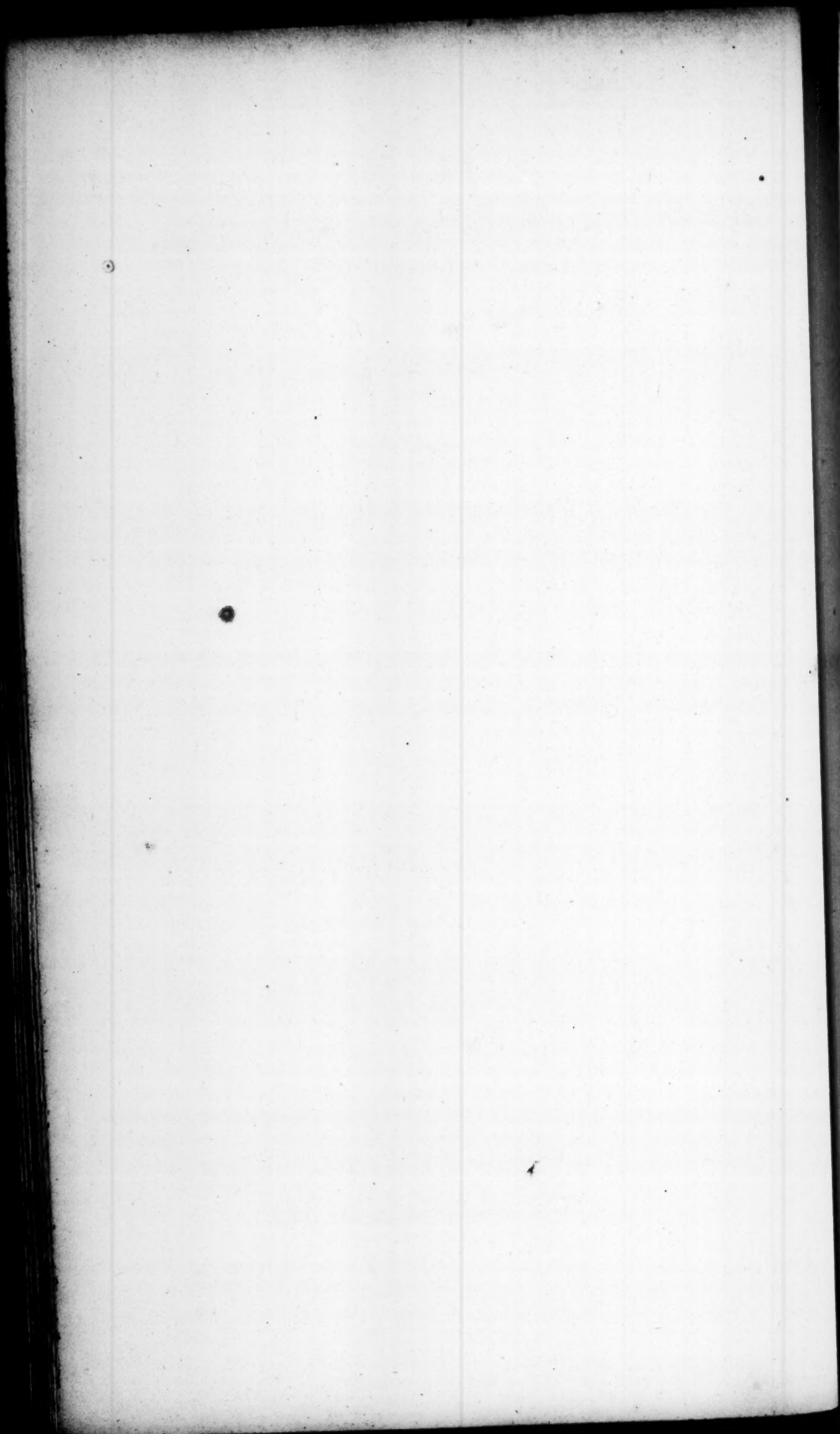
- 69. Description of the separate bones of the cranium.
- 70. Observations on the form, structure, and particular use of each.

Of the bones of the face.

- 71. Of their connexion with the proper bones of the skull.
- 72. A particular description of each of these bones.
- 73. Of their general, and particular uses.
- 74. Of the formation and use of the Lachrymal Duct.
- 75. Remarks on the manner of performing the operation for the *Fistula Lachrymalis*.
- 76. Of Caries, and other diseases of the bones of the face.
- 77. Of the lower Jaw.
Of its Articulation:

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Of the alveolar processes.

Of the absorption of these processes in old age.

78. Of the teeth in general.

^bOf the structure and form of the different classes of teeth.

Of their enamel, and its uses.

79. Observations on the passage of the nerves into the teeth.

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80. Of their diseases.

Remarks on the usual method of drawing teeth.

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81. Of the vertebræ in general.

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82. Of the processes of the vertebræ and their separate uses.

83. Of the large canal for the transmission of the spinal marrow.

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Of the lateral holes for the passage of the nerves.

Of the Vertebrae of the Neck.

84. Of the ATLAS and EPISTROPHEUS.
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85. Of the perforations of the cervical vertebrae, for the passage of the vertebral artery.

Of the Dorsal Vertebrae.

86. Of their substance, size, &c.

87. Of their articulation with the ribs.

Of the Lumbar Vertebrae.

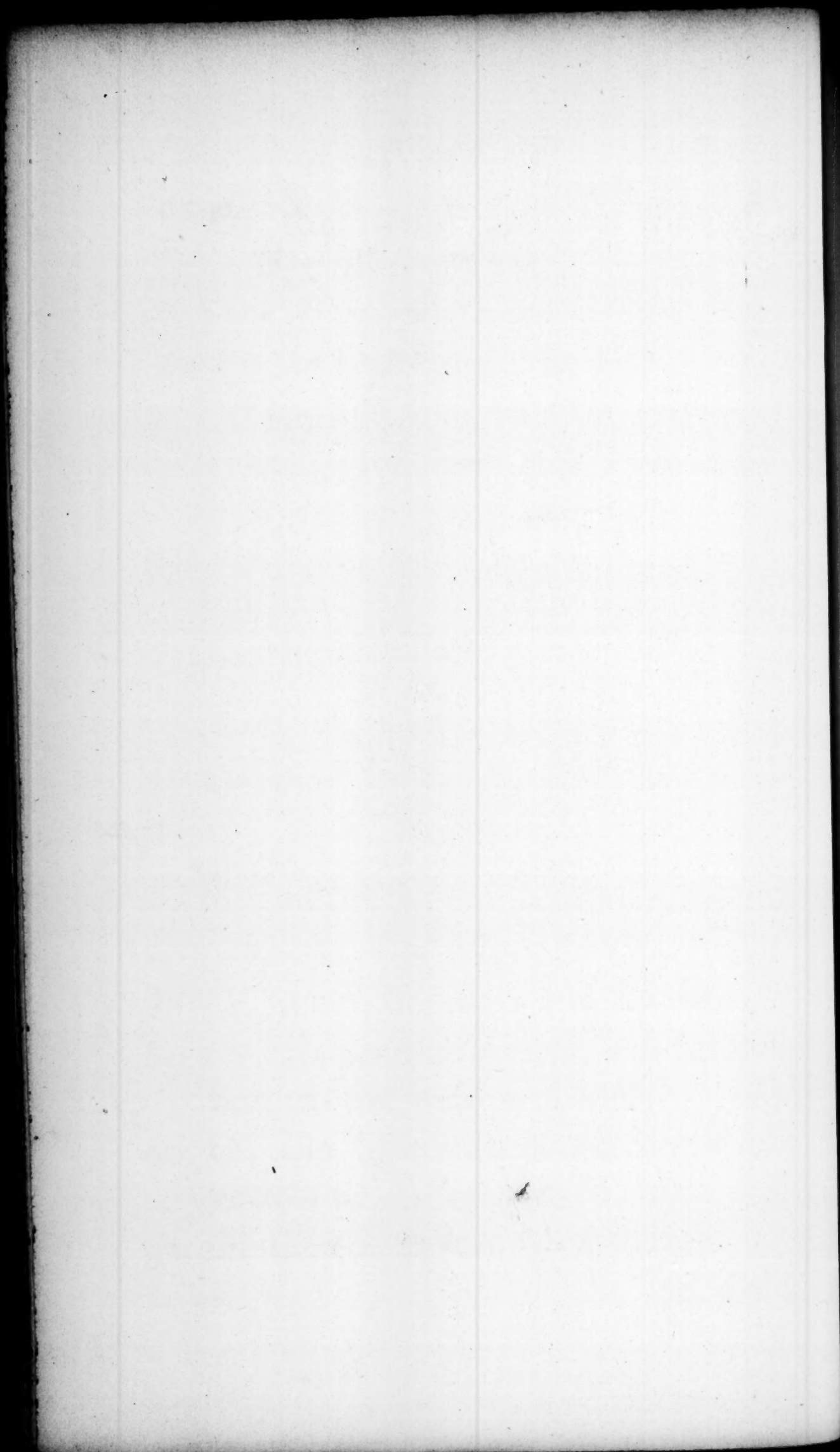
88. Of their situation and strength.

89. Of the peculiarities of the vertebrae of the back and loins.

90. Of the ligaments connecting the vertebrae.

91. Of their intervening cartilages.

92. Of



92. Of the incurvations of the spine.

93. Of its mechanism and uses.

94. Deformities of the spine.

 Their causes, and methods of cure.

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Of the Os Sacrum.

95. Of the false vertebræ and holes for the passage of nerves.

96. Of the Os COCCYGIS.

 Its structure and use.

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97. Composed of the *Ilium*, *Ischium*, and *Pubis*.

98. These bones separately considered.

99. Acetabulum how formed.

100. Of the Symphysis Pubis.

101. Remarks on the structure, and different capacities, of the Pelvis, in the male and female Skeleton.

102. De.

102. Deformities of the Pelvis considered as the cause of difficult births.

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103. Of the Ribs in general.
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Of their form, situation, &c.

104. Of the cartilages of the ribs.
Observations on the use of these cartilages.

105. Of the deformities and diseases of the ribs.

Remarks on the treatment, and consequences of fractured ribs.

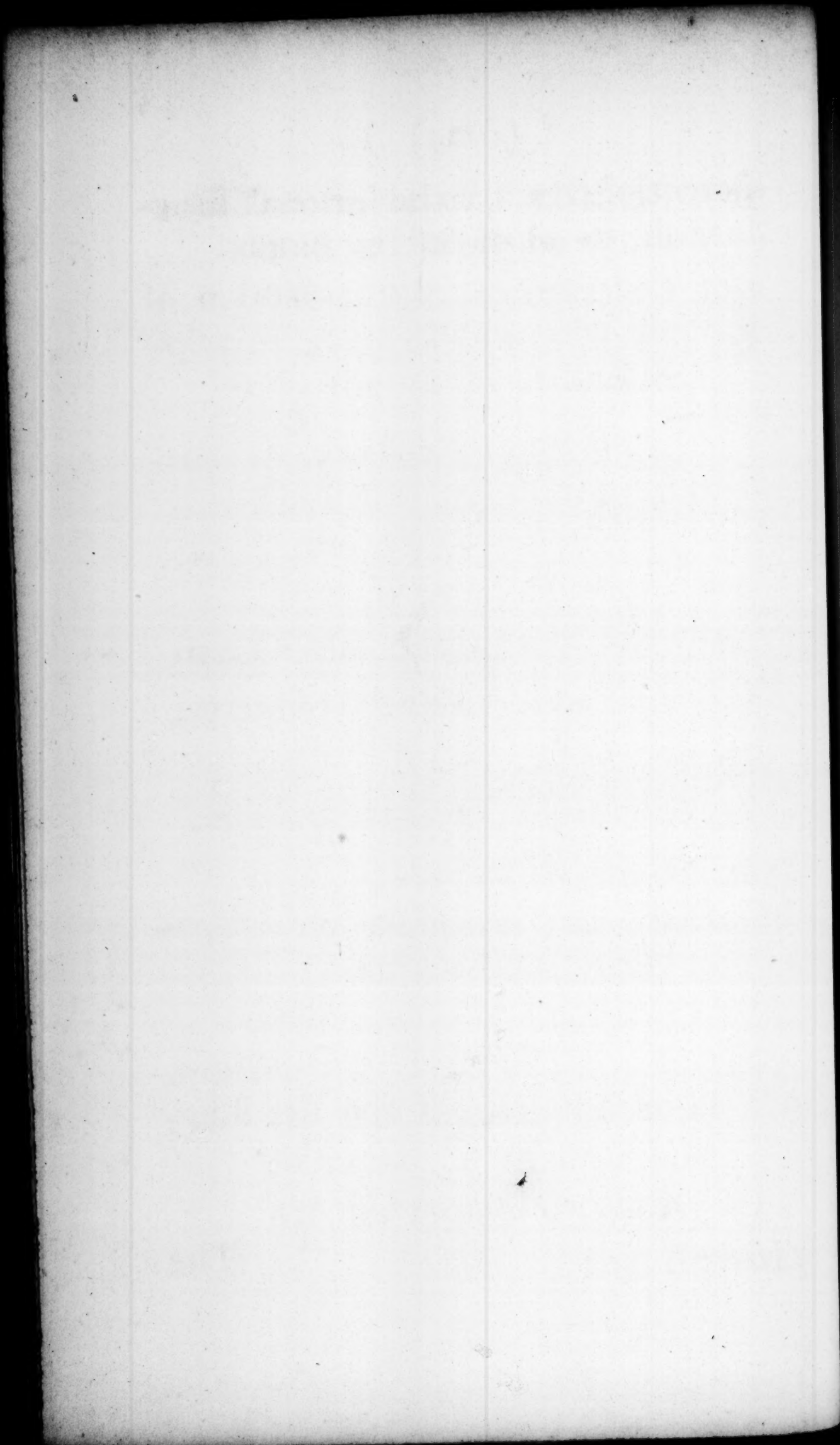
Of the Sternum.

106. Of the separate bones of the sternum.

Of the *xyphoid* cartilage.

107. Remarks

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107. Remarks on the general structure, and use of the thorax.

108. Observations on the motion of the ribs, and sternum, in respiration.

Of the Upper Extremity.

109. Of the SCAPULA.

Its structure, shape, processes, &c.

Of its articulation with the clavicle, and with the humerus.

110. Of the CLAVICLE.

Its situation, structure and uses.

111. Of the HUMERUS.

Structure, processes, and articulation of this bone.

Of the extent of its motion.

112. Of the treatment of fractures, and luxations, of the shoulder, and arm.

113. Of the RADIUS and ULNA.

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The structure, &c. of these bones, separately examined.

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114. Of their particular uses, and the variety of their motions.

115. Of the interosseus ligament, and its uses.

116. Of the CARPUS.

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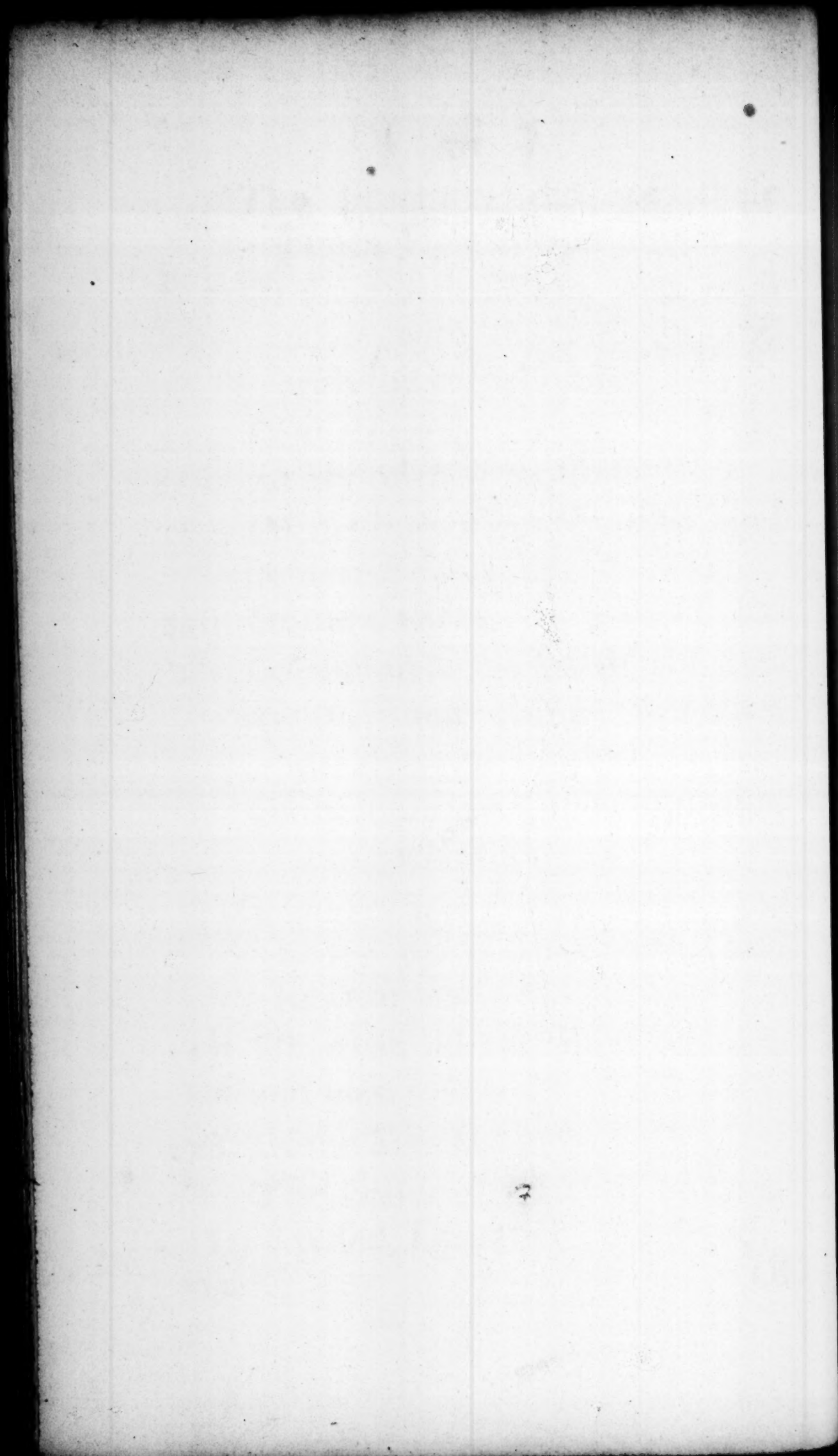
Of their articulation with the bones of the fore-arm, and metacarpus.

117. Observation on their motion and uses.

118. Of the METACARPUS.

The bones of which it is composed, separately considered.

Of



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119. Of the Bones of the Fingers and Thumb.

Of their structure, articulations, &c.

120. Remarks on the number, situation, and uses, of the *Offa Sessamoidea*.

121. General Observations on the mechanism, and uses, of the bones of the upper extremity.

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122. Of the Os FEMORIS.

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123. Observations on the motions of this joint.

124. Of luxations, fractures, &c. of the thigh bone, and methods of treating them.

125. Of the TIBIA and FIBULA.

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126. Of the semilunar cartilages, crucial ligaments, &c.

127. Of the PETELLA, and its uses.

128. Of luxations and fractures of the patella, and of the bones of the leg.

129. Of the TARSUS.

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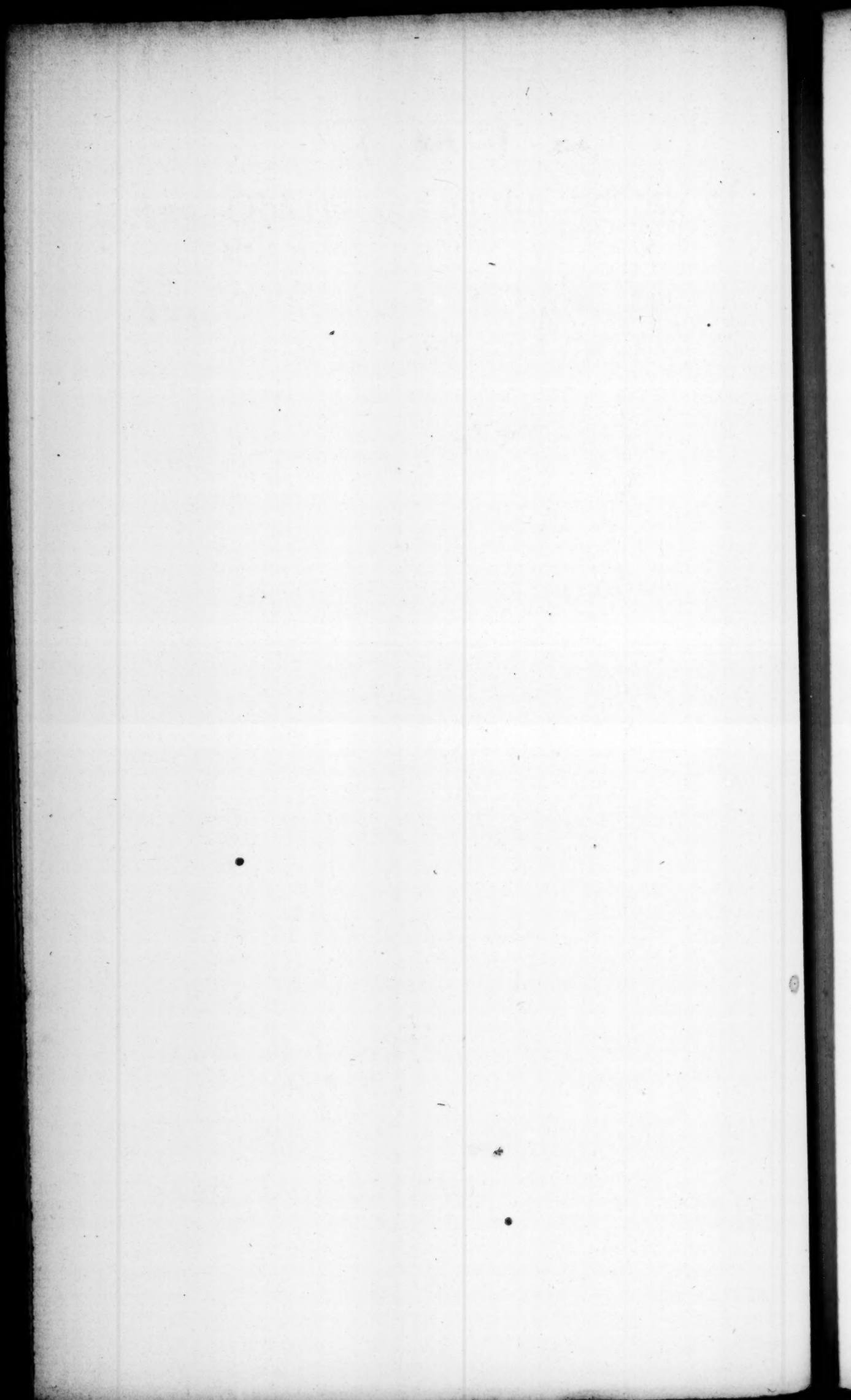
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The names and structure, of the seven bones which compose it.

Of their connexion with each other, and particular uses.

130. Of the articulation of the *astragalus*, with the bones of the leg.

131. Of the METATARSUS and TOES.
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132. Remarks on the mechanism of the foot, and the manner in which progression is performed.

133. SKELETON of a FŒTUS examined, and compared with that of the adult subject.

134. Remarks on its striking peculiarities, with regard to the number, shape,

shape, connexion, and uses of the bones.

135. Observations on the peculiar advantages of the cartilaginous appendages affixed to the bones of a foetus.

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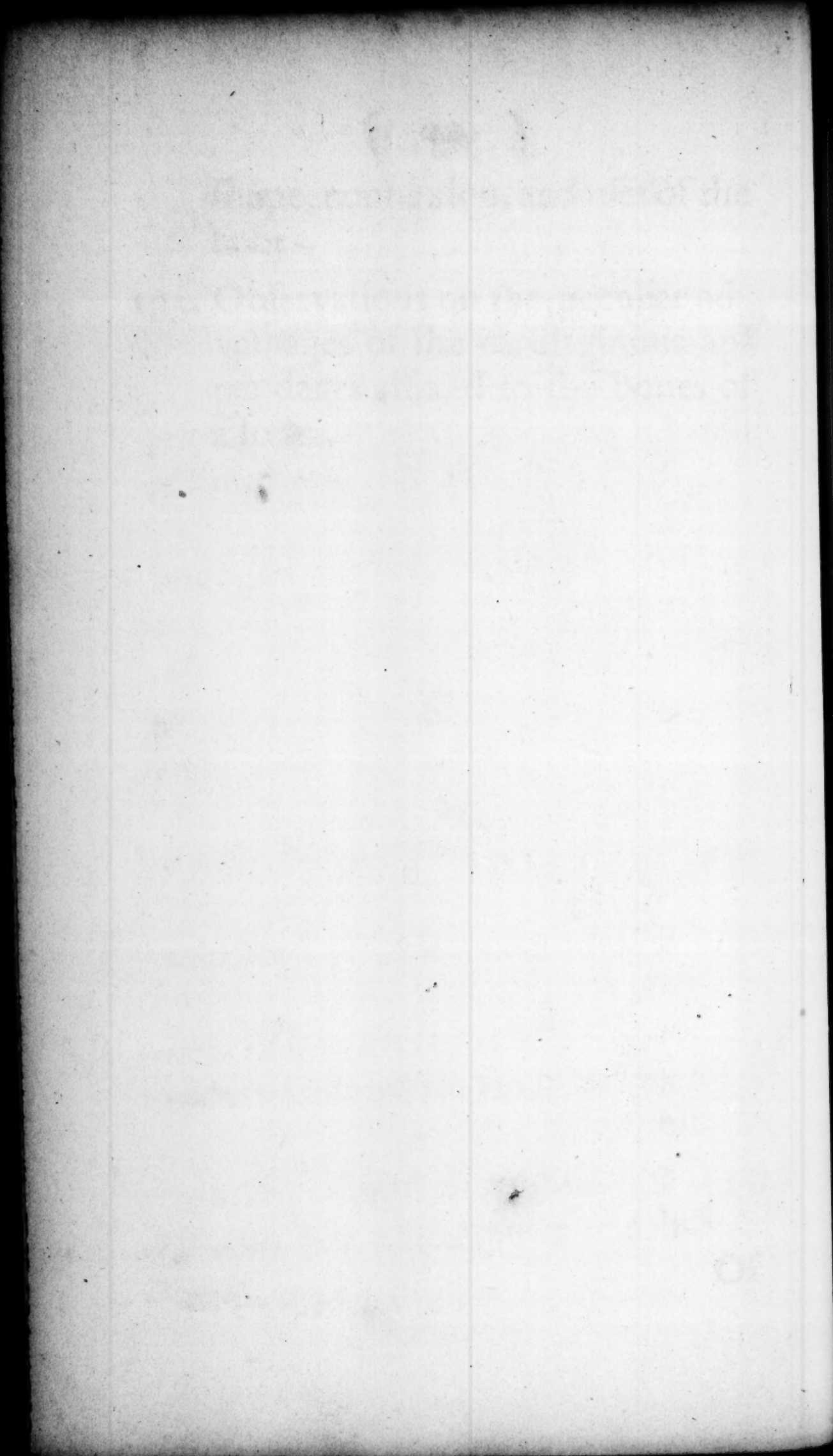
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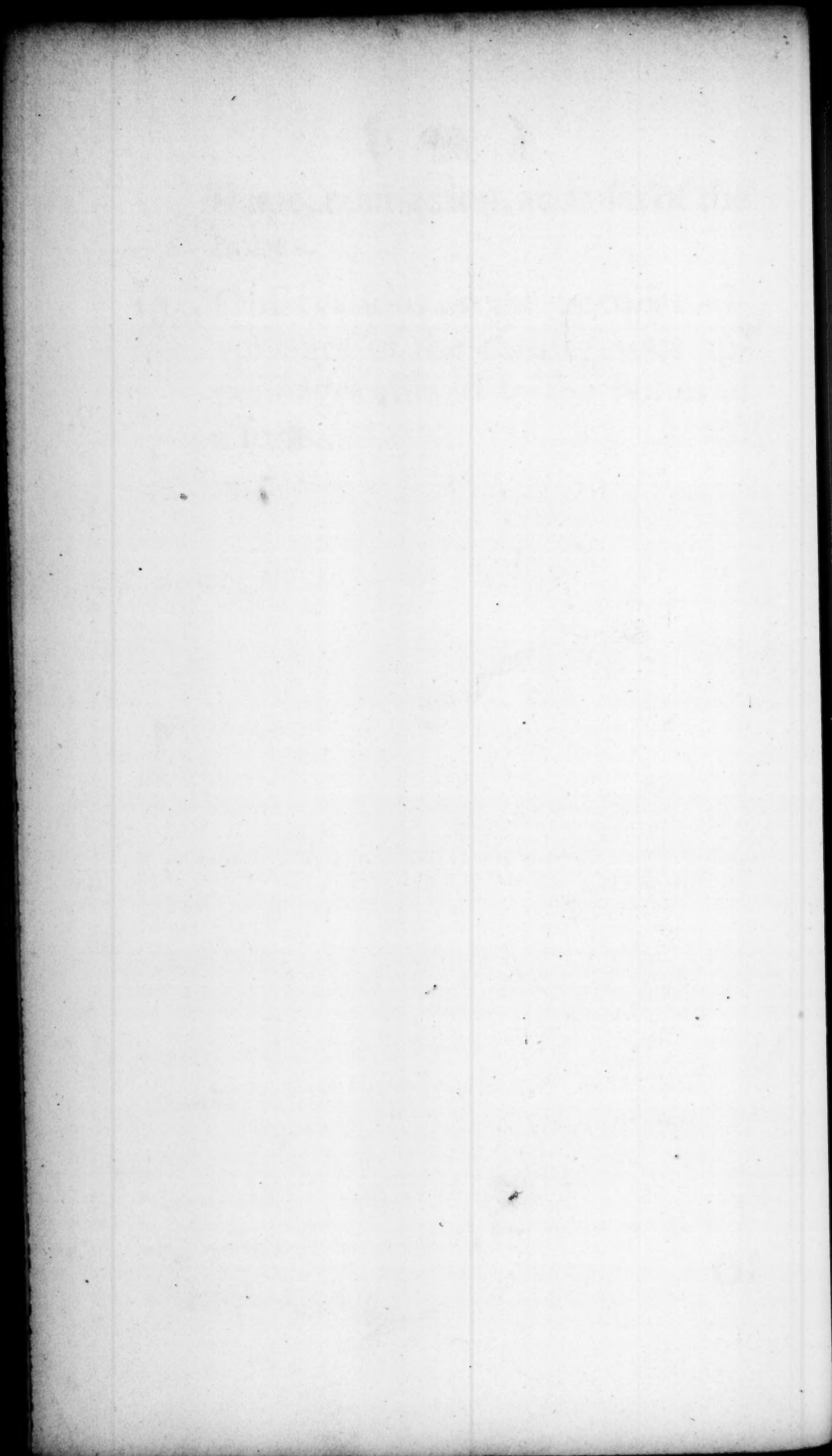
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OF MUSCLES.

136. **O**F the general structure, and various attachments, of muscles.
137. Of simple, and compound muscles.
138. Of the names of muscles derived from their insertion, connexion, form, situation, use, &c.
139. Muscles voluntary, and involuntary.
140. Of the phænomena of muscular action.
141. Hypotheses concerning the immediate cause of muscular motion.
142. Tendons how formed.
Of their connexions, and uses.

143. *Apon-*



OF MUSCLES.

136. **O**F the general structure,
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of muscles.
137. Of simple, and compound
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mediate cause of muscular mo-
tion.
142. Tendons how formed.
Of their connexions, and uses.
143. *Apon-*

143. *Aponeuroses.*

Their structure, and uses.

* *Muscles of the Abdomen.*

144. A particular description of their structure, and mode of action.

Of their manifold use.

Great importance of the action of these muscles, to the animal œconomy.

145. Of *Poupart's* ligament.

146.^d Particular description, and use of the abdominal rings.

147. Remarks on the descent of the testis.

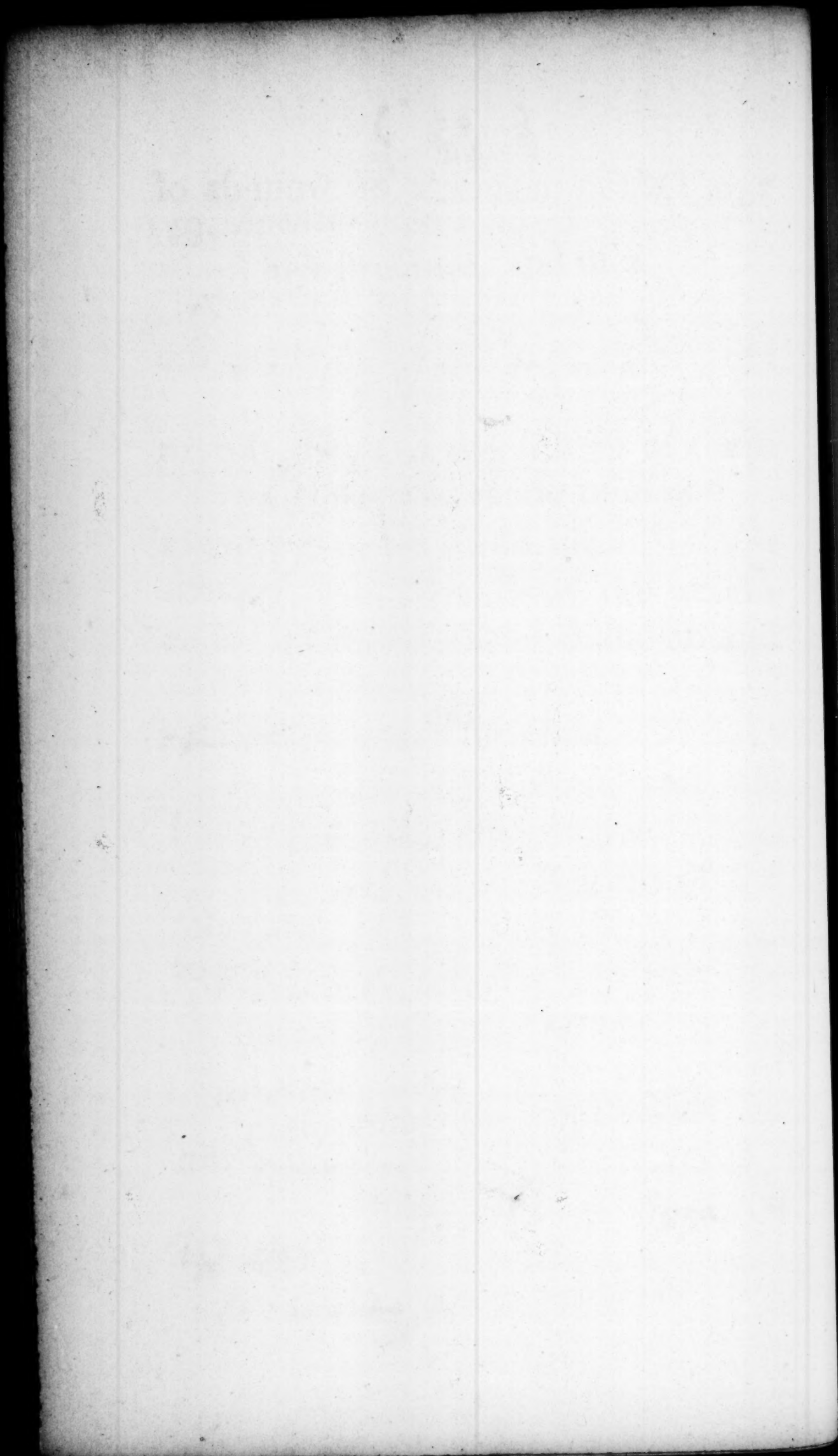
148. Practical remarks on the different species of *Herniæ*.

149. Observations on the manner of performing the operation for *Bubonocèle*.

150. Of

* See a List of all the Muscles at the end.

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150. Of the treatment of wounds of the abdomen.

Muscles of the Upper Extremity.

151. Of the muscles which move the scapula on the trunk.
152. Of those which move the os humeri on the scapula.
153. Of those which move the bones of the fore-arm on the os humeri.
154. Of those which move the radius upon the ulna.
155. Of those which move the carpus on the fore-arm.
156. Muscles of the metacarpus and the fingers.
157. Of the general and particular uses of the muscles of the upper extremity.

Muscles of the Lower Extremity.

158. Of the muscles which move the thigh upon the pelvis.

D

159. Of

- 159. Of those which move the bones of the leg, upon the os femoris.
- 160. Of those which move the tarsus on the leg.
- 161. Muscles which move the metatarsus, and the toes.
- 162. Remarks on the structure of each of the above muscles.
Of their uses.

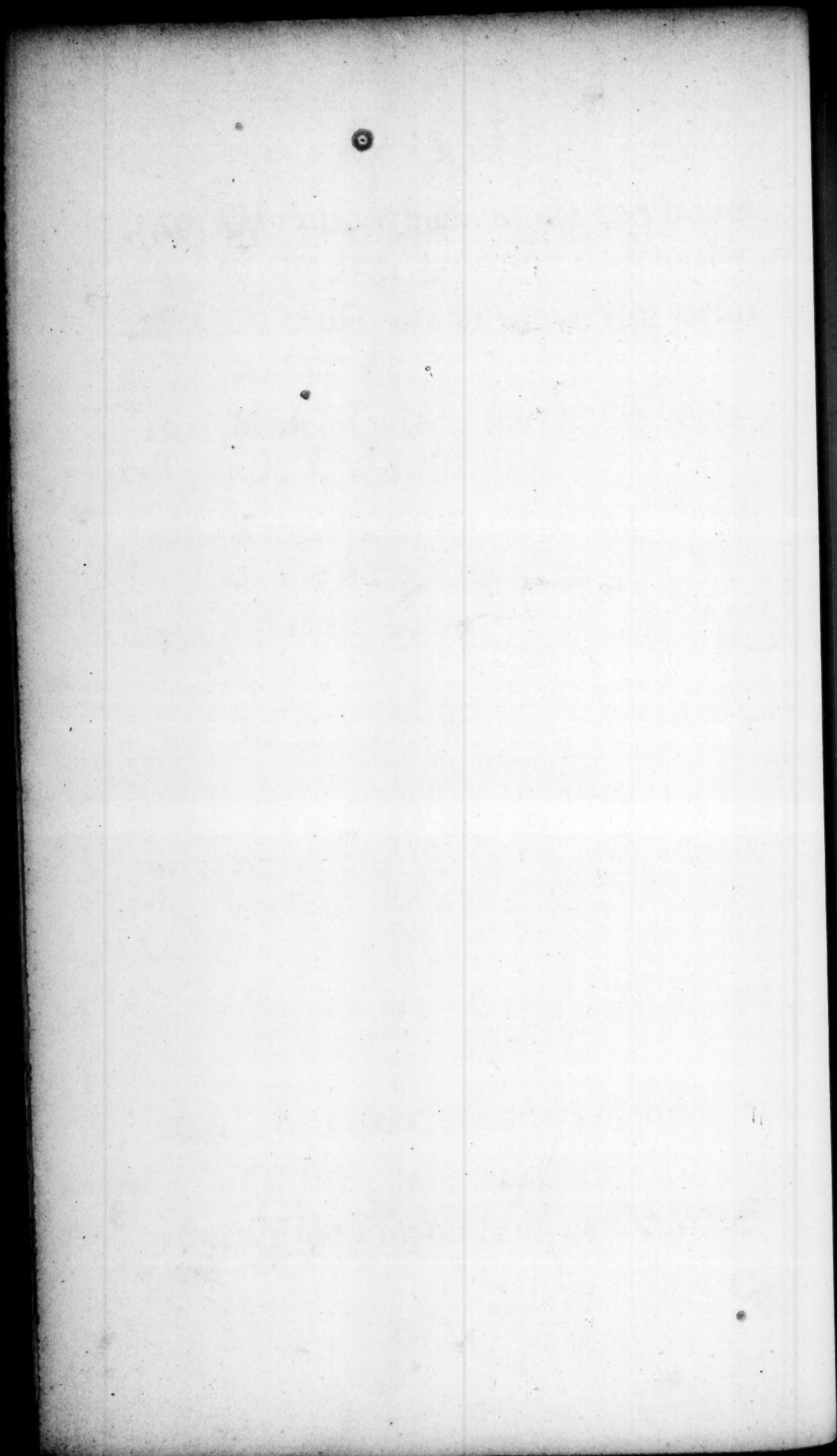
Muscles which move the Head on the Trunk.

- 163. Situation, structure, and use of each of these muscles.

Muscles of the Neck, Back, and Loins.

- 164. Their structure and situation.
Of their general uses.
- 165. *Of the Physiology of the Muscles.*

OF



OF THE CONTENTS OF THE
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166. Its situation and attachments.
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pleura.
167. Of the *mediastinum*, and its
uses.
168. Pathological remarks on the dis-
eases of the pleura.
Of the *hydrops pectoris*.

Of the Thymus.

169. Different states of this gland in
the adult subject, and in the
foetus.
Opinions concerning its use.

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170. Its structure, &c.
Of the fluid contained in it.

Of the use of the pericardium.

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171. Of the situation of the heart.

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Remarks on the disposition of its muscular fibres.

172. Division of the heart, into auricles, and ventricles.

Of the septa between the auricles and ventricles.

Of the *foramen ovale*.

Observations on its being sometimes found pervious in the adult subject.

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173. Its form, substance, and situation.

Of the opening of the two *venæ cavæ* into it.

Of

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present state of the

affairs of the country.

The Commission has

been very busy

in the last few days.

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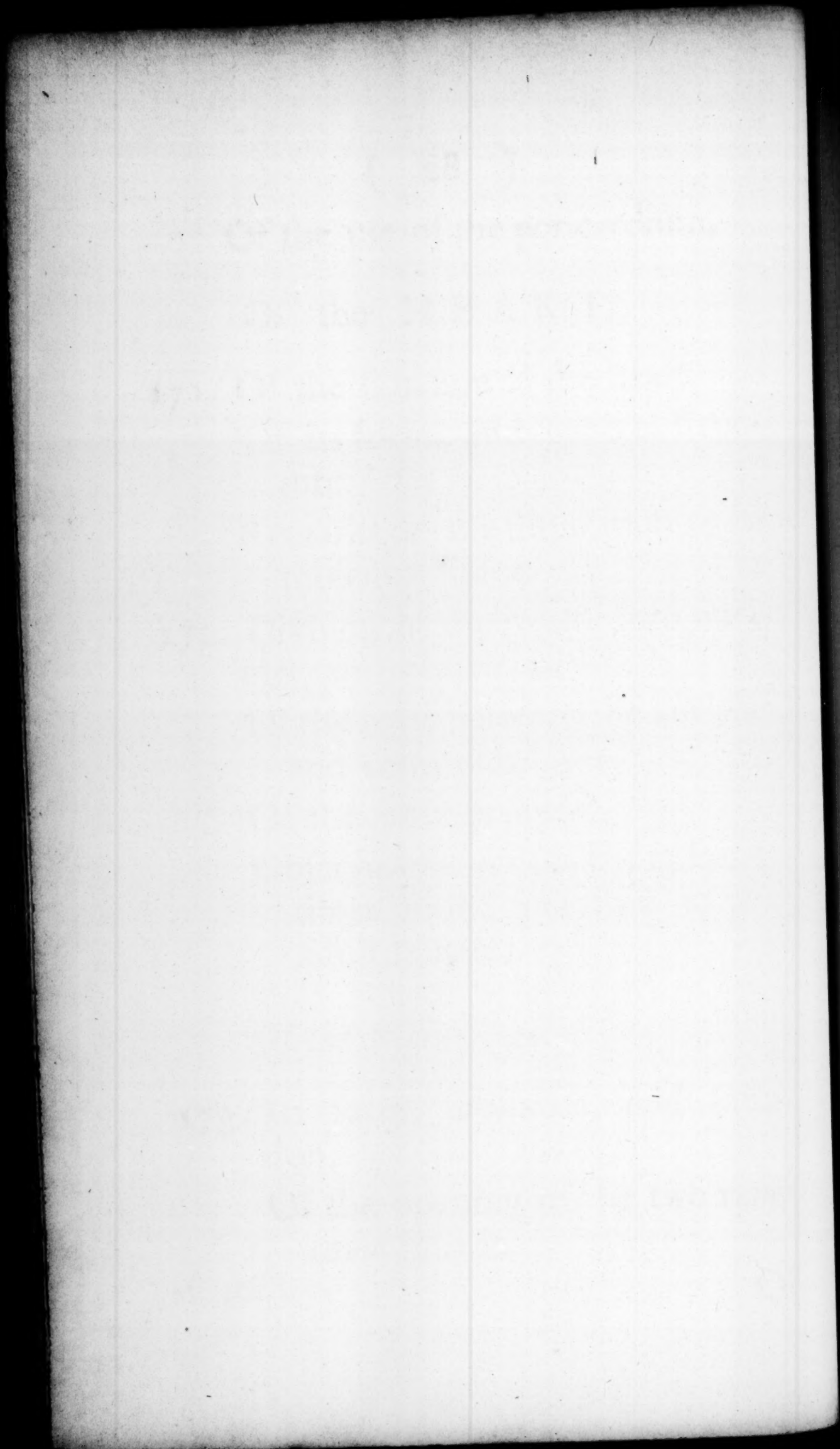
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They have been

very busy in the

last few days.



Of its communication with the right ventricle.

Of the Right Ventricle.

174. Its particular structure, situation, and capacity.

175. The *columnæ carneæ* how formed. Their particular uses explained.

176. Of the *valvulæ tricuspidales*, placed between the right ventricle and auricle.

Their structure and use.

177. Of the communication of the right ventricle with the pulmonary artery.

Of the *valvulæ semilunares*.

Their use, &c.

Of the Left Auricle.

178. Its structure, &c.

Of the entrance of the pulmonary veins into it.

179. Of its communication with the left ventricle.

180, In

Of the Left Ventricle.

180. Its substance, situation, &c.
181. Of the *valvulæ mitrales*, placed between this ventricle, and its corresponding auricle.
Of the office of these valves, and their manner of acting.
182. Of the communication of the left ventricle with the AORTA.
Valves of the aorta.
183. Of the coronary veins and arteries.
184. Remarks on the different capacities, and strength of the two ventricles.
185. Observations on the involuntary action of the heart.
186. Of the use of the heart in general.
187. Of *polypi*, *aneurism*, and other diseases of the heart, and its vessels.
188. Of

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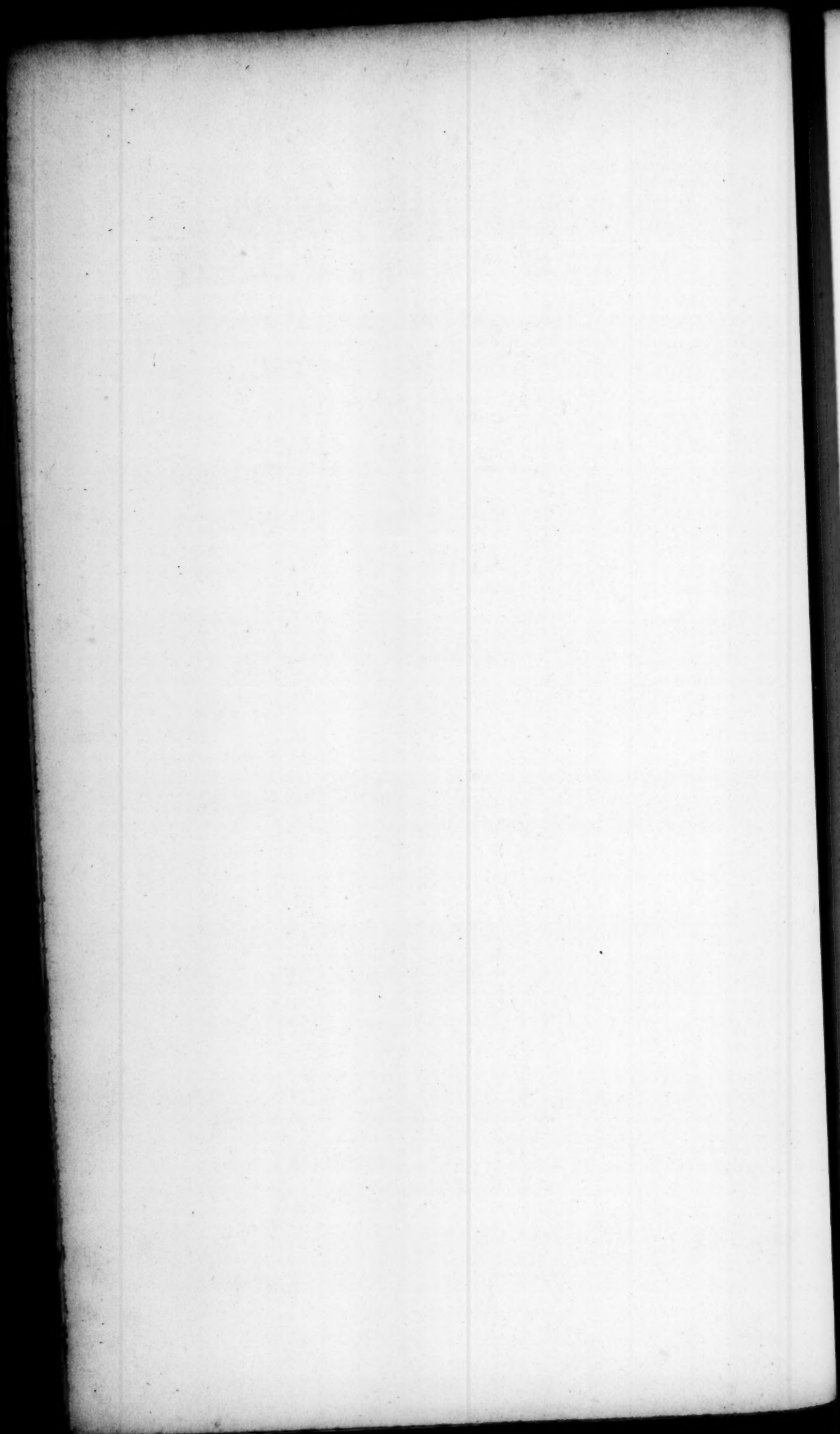
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188. Of the structure of arteries and veins, and their general use.

Of the *vasa vasorum*.

Of the anastomosing branches of the blood vessels.

Of the connexion between the extreme branches of arteries and veins.

189. Particular description of the AORTA and VENA CAVA.

^fOF THE CIRCULATION OF THE BLOOD.

190. Of the ancient doctrines concerning it.

Of the discovery of it, by Harvey.

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191. Of the SYSTOLE and DIASTOLE of the ventricles and auricles of the heart.

Of

Of their alternate action.

192. Of the passage of the blood from the right ventricle to the lungs, by the pulmonary artery.
193. Of its return from the lungs to the left side of the heart, by the pulmonary vein.
194. Of its exit from the left ventricle, and distribution throughout the whole body, by the aorta and its branches.
195. Of its return to the right auricle of the heart, by the vena cava.
196. Experimental proofs of the reality of this mode of circulation.
197. Remarks on the quantity of blood, and the velocity with which it circulates in a healthy state.
198. Of the valves in the veins, their situation and use,
199. Of the systole and diastole of the arteries.

200. Ob-

of

200. Observations on the different kinds of pulses, in various diseases.

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201. Their situation, and figure.

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206. Of the *trachea*, or *aspera arteria*.

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207. Situation, figure, and attachments of the diaphragm.

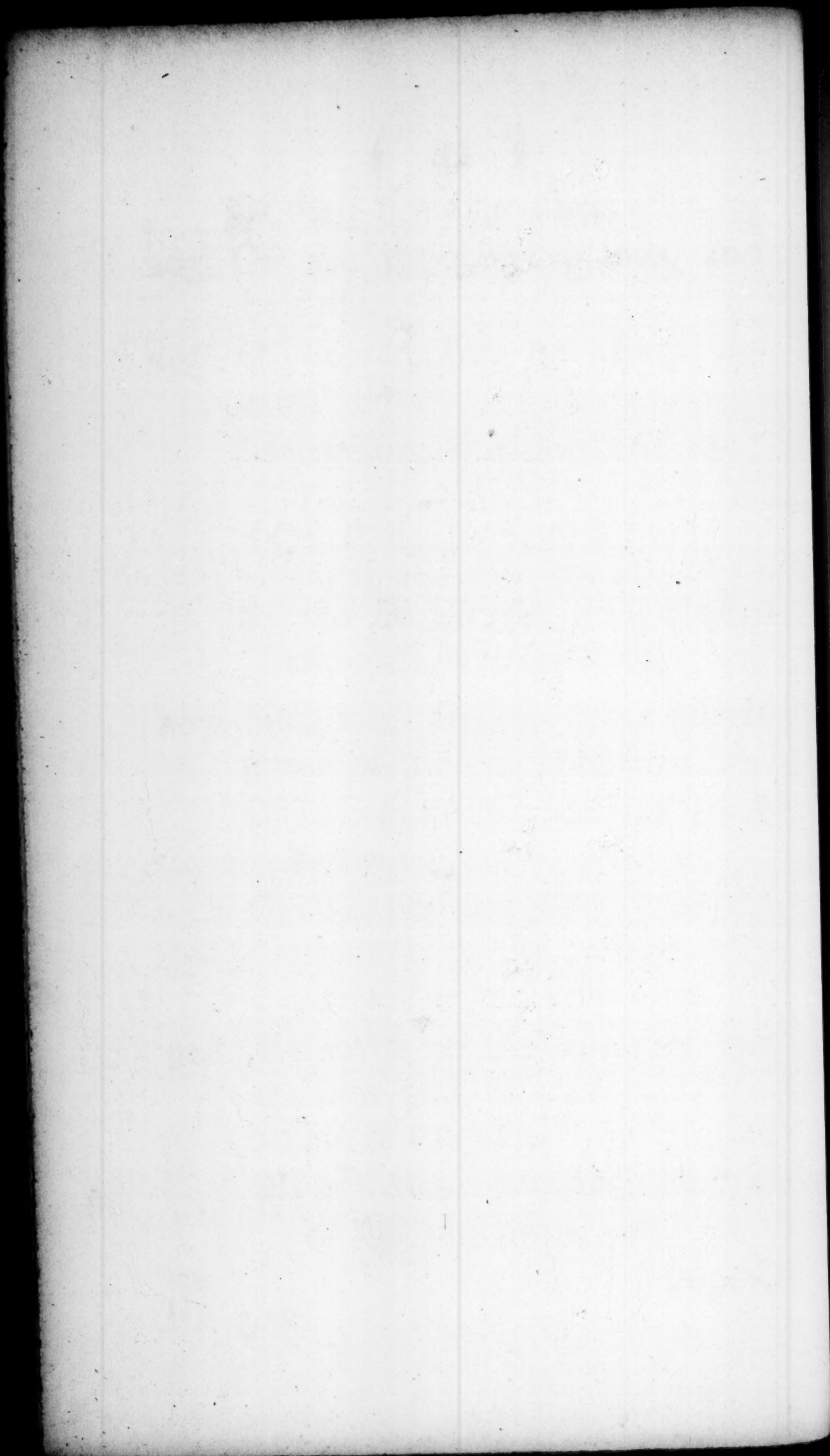
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208. Remarks on the alternate contraction and relaxation, of this important muscle.

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214. Observations on the cause of hickuping, and other spasmodic affections of the diaphragm.

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216. Of suffocation.

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217. General remarks on the peculiarities of the circulation in a foetus.

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219. The peculiarities of each pointed out, and the causes of them investigated.

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220. Practical remarks on the treatment of *Popliteal Aneurism*.

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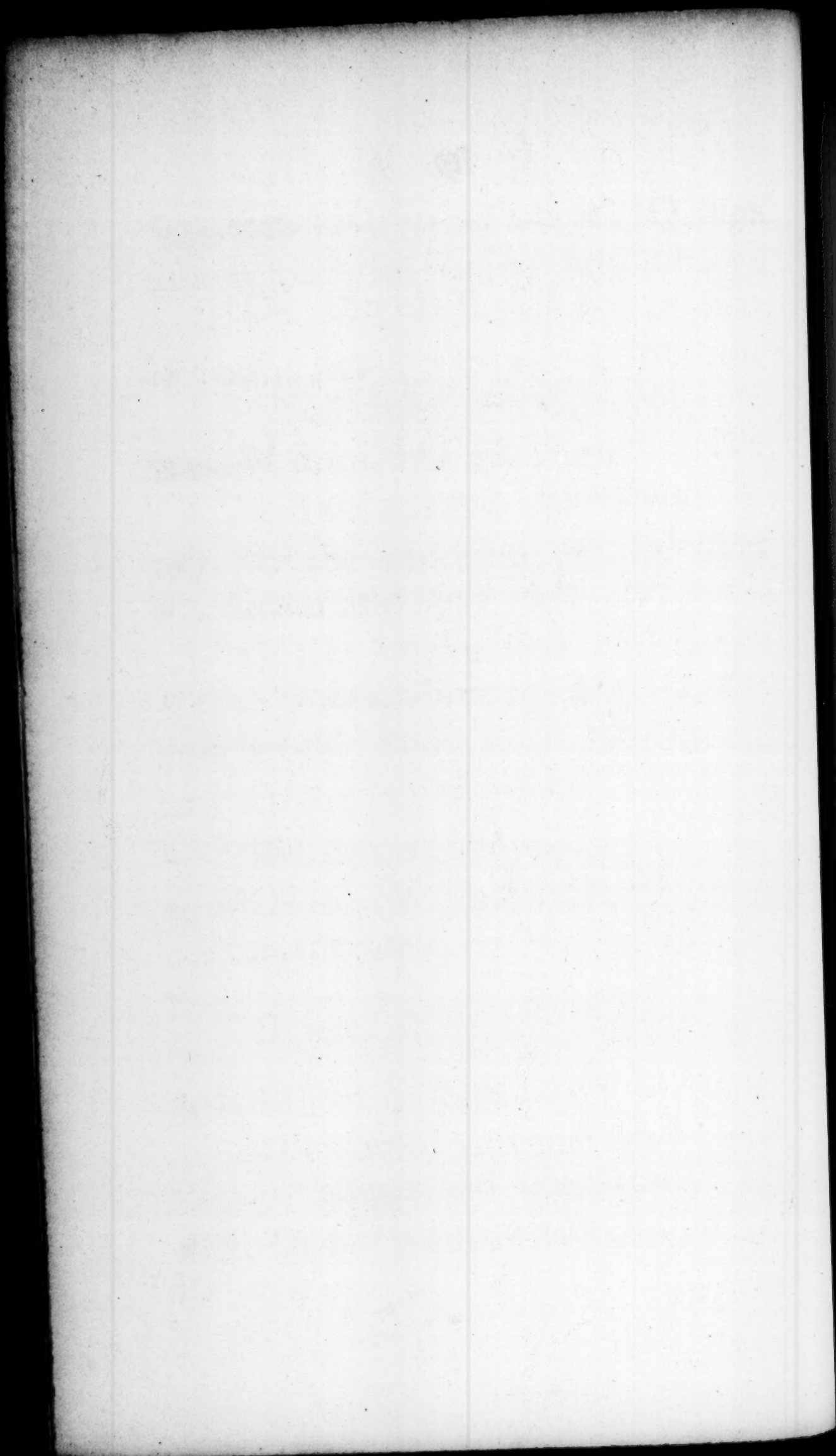
232. Of the cortical substance.

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233. Of the medullary substance,
234. Of the *corpus callosum*, *fornix*,
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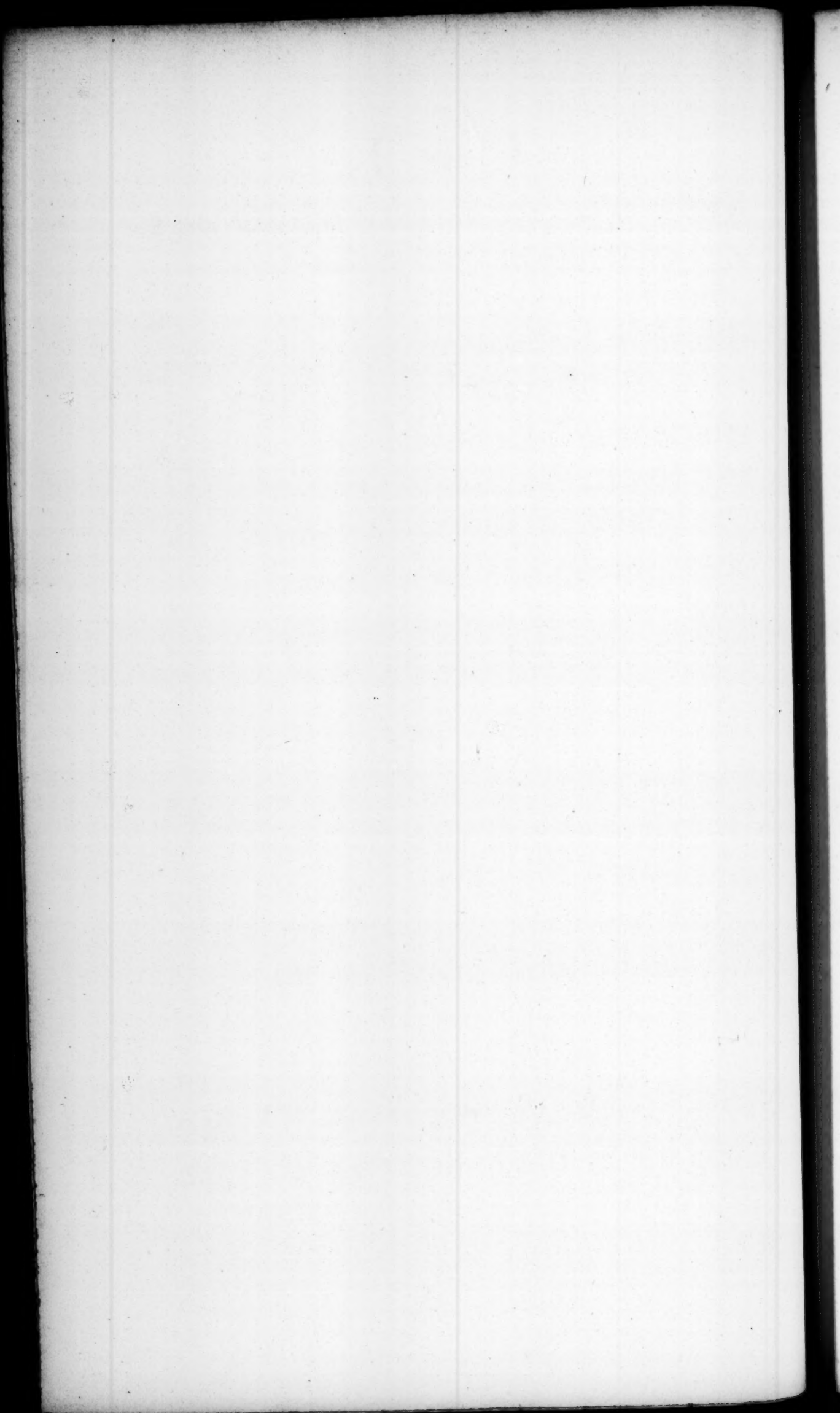
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256. Of their excretory ducts, and the entrance of them into the mouth.
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265. Of the muscles employed in mastication, deglutition, and formation of the voice.

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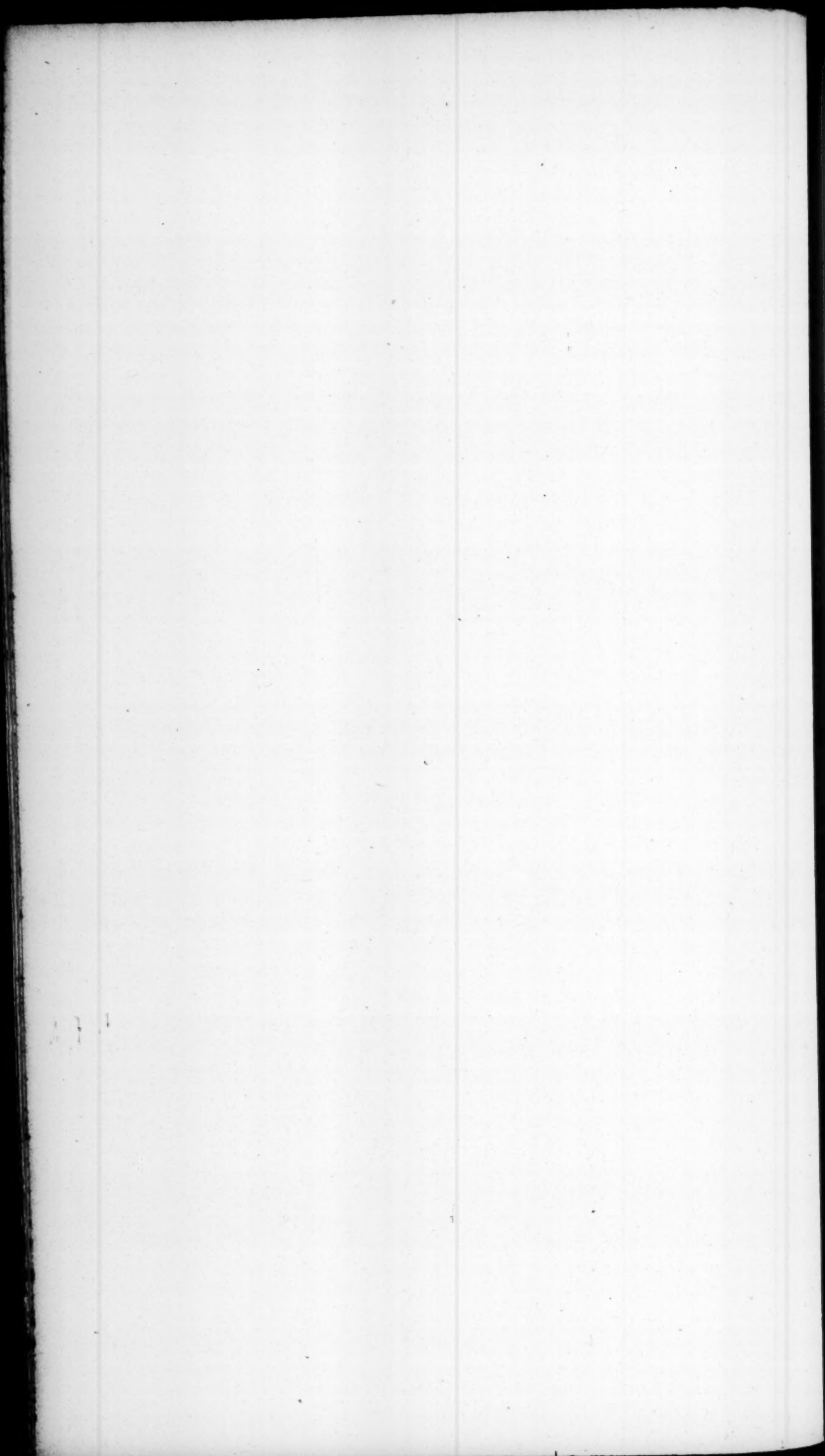
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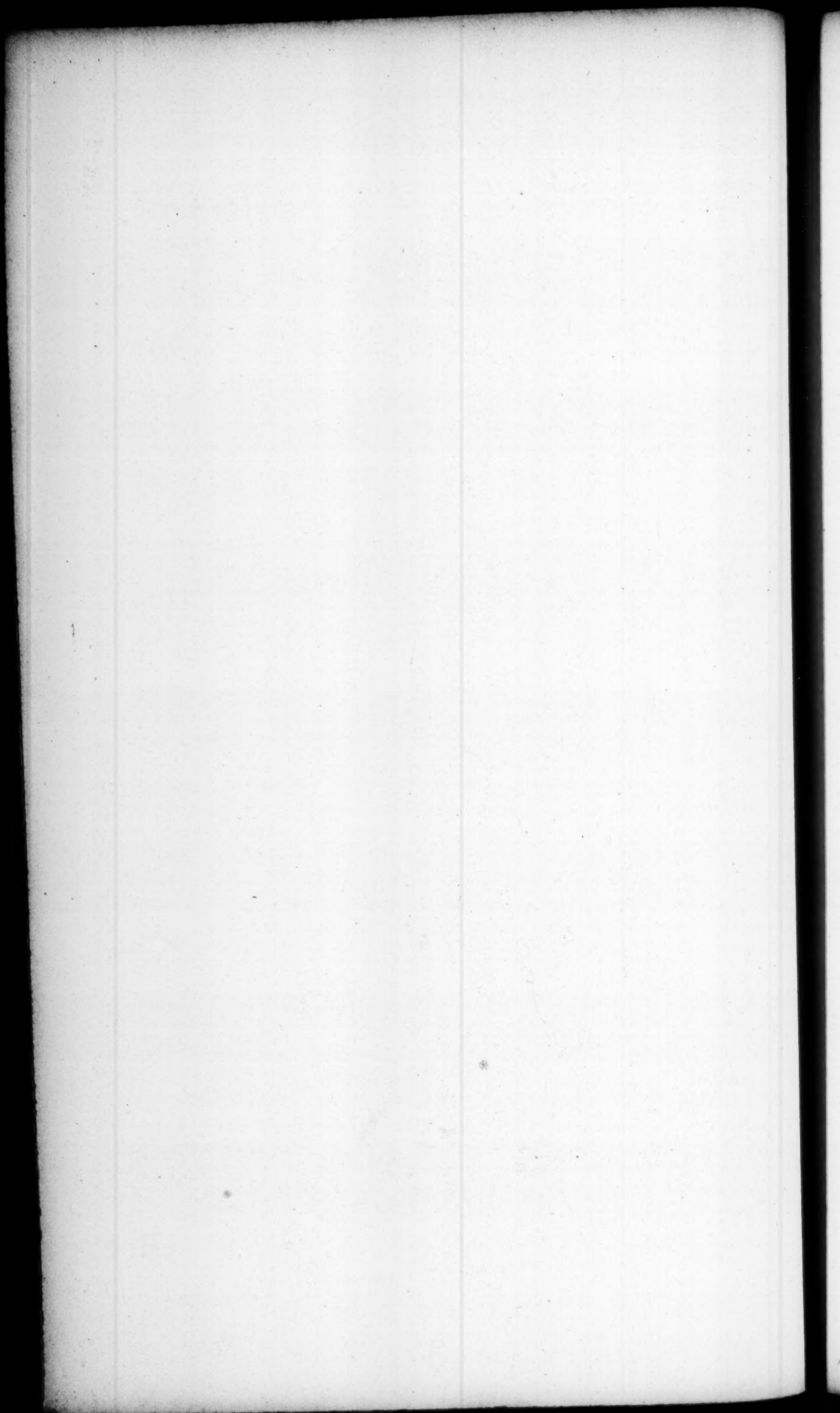
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289. Of the nature and properties of the pancreatic juice.

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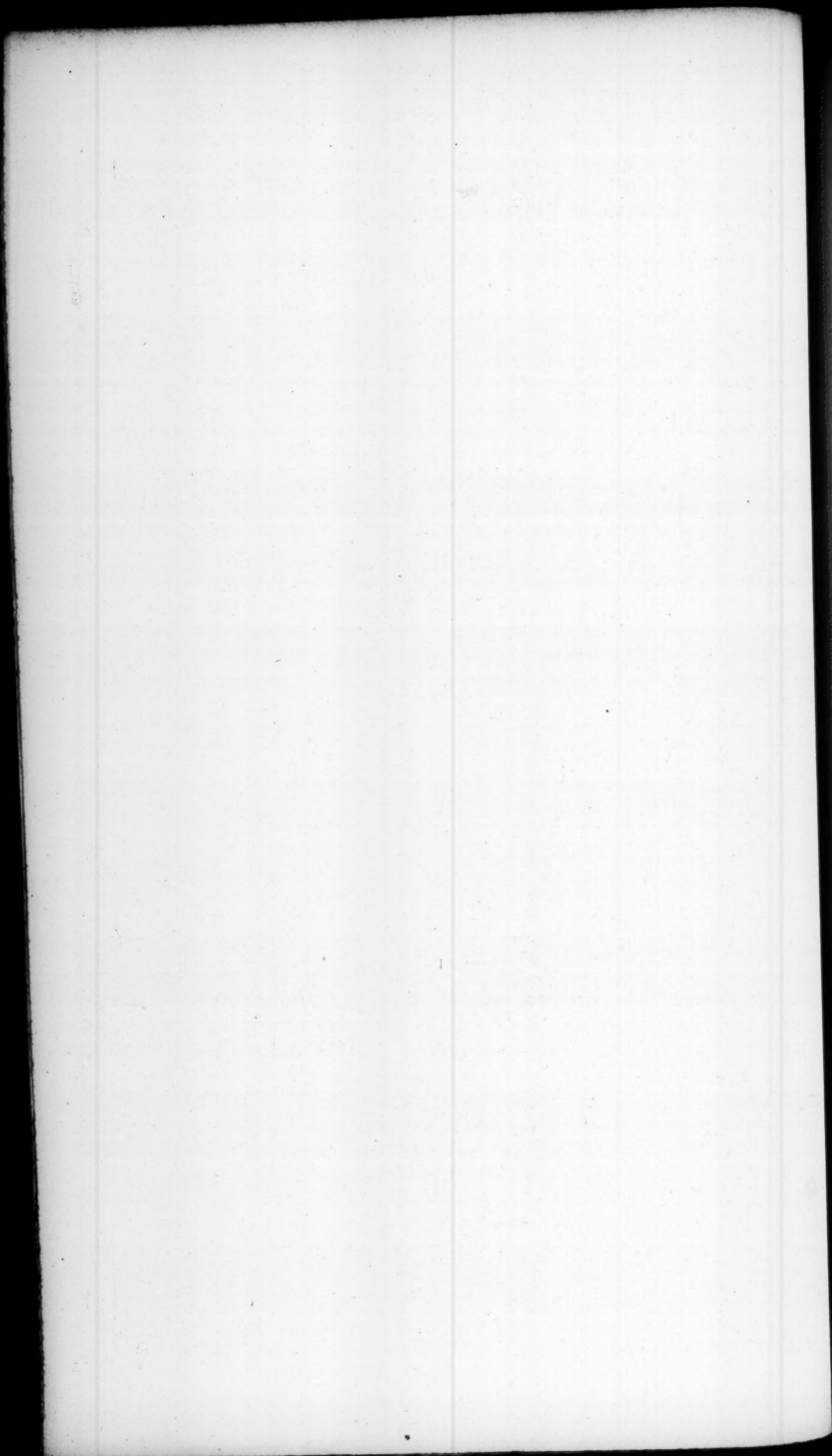
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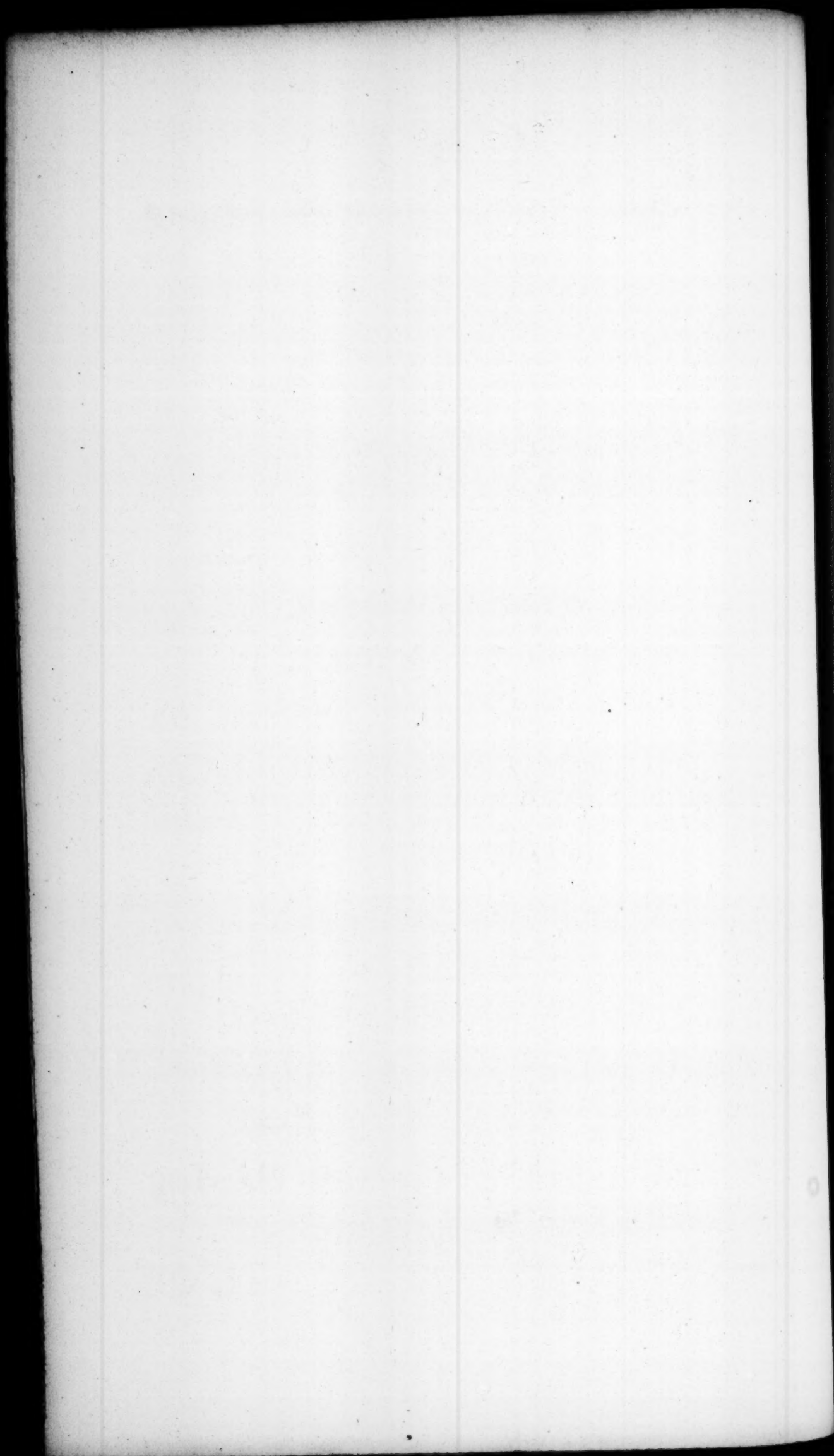
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302.^a General observations concerning those animals which have no gall bladder.

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309. General account of *Chylification*.

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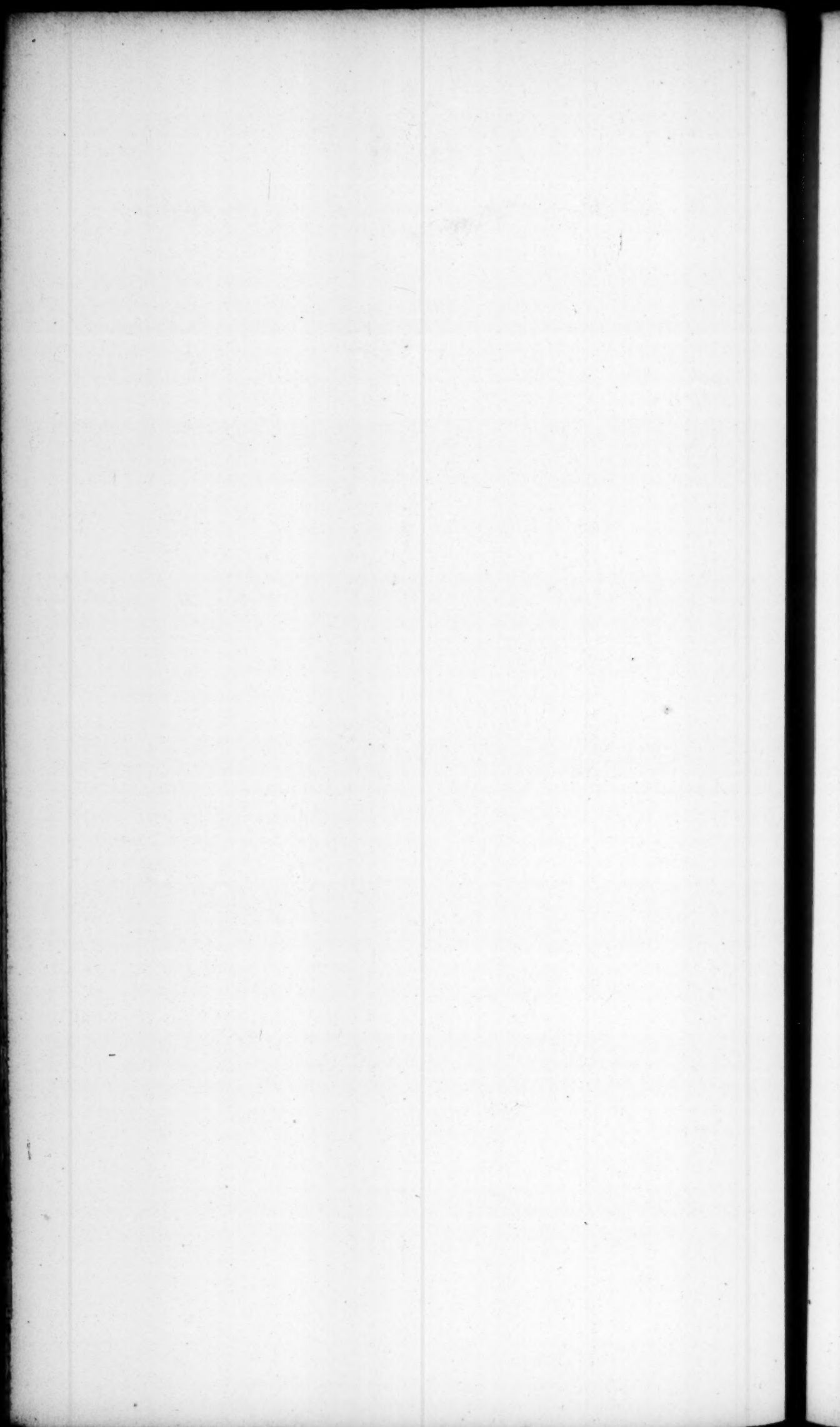
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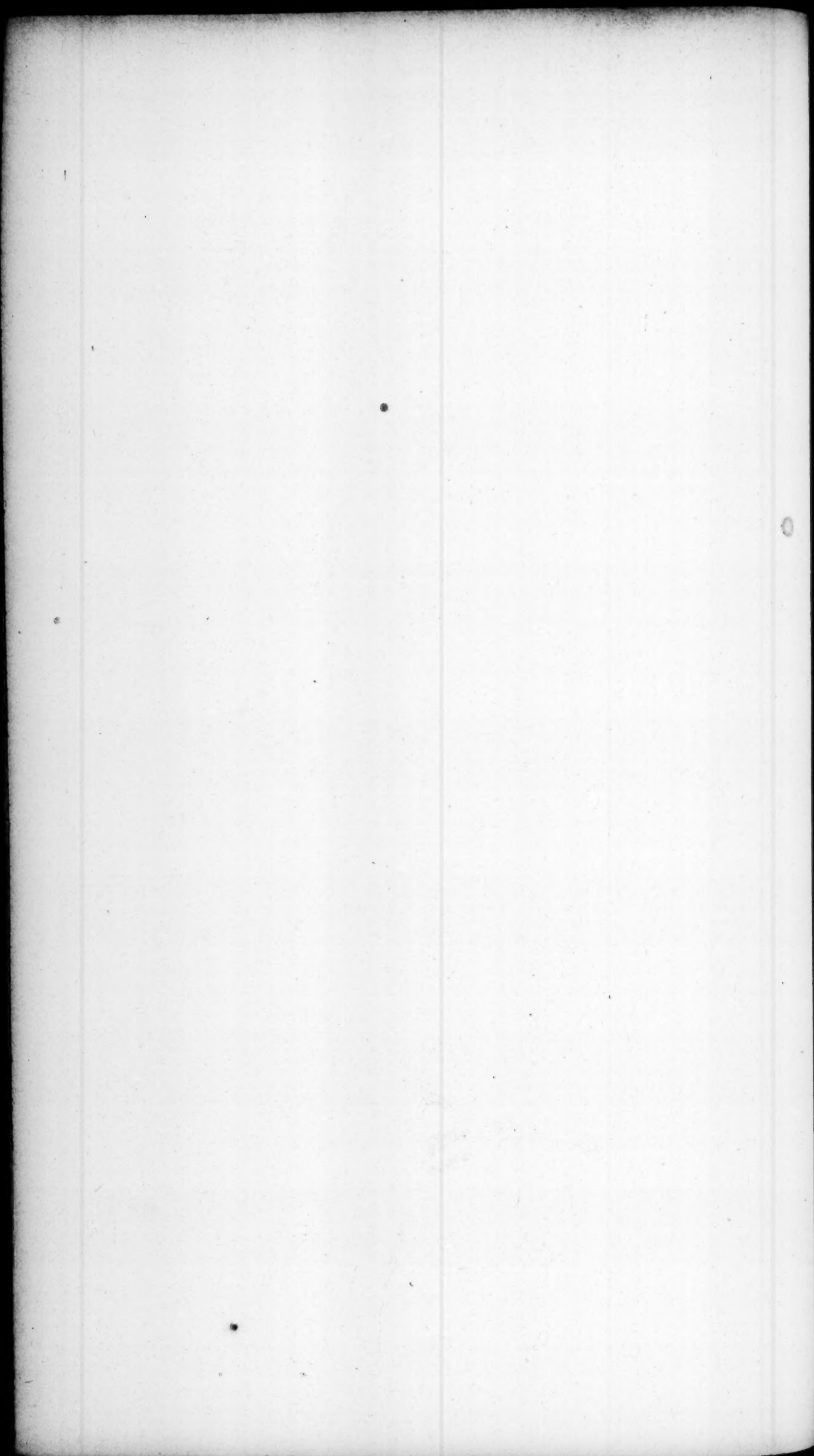
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335. Remarks upon its passage, and the manner in which the *chyle* and *lymph* are propelled through it.

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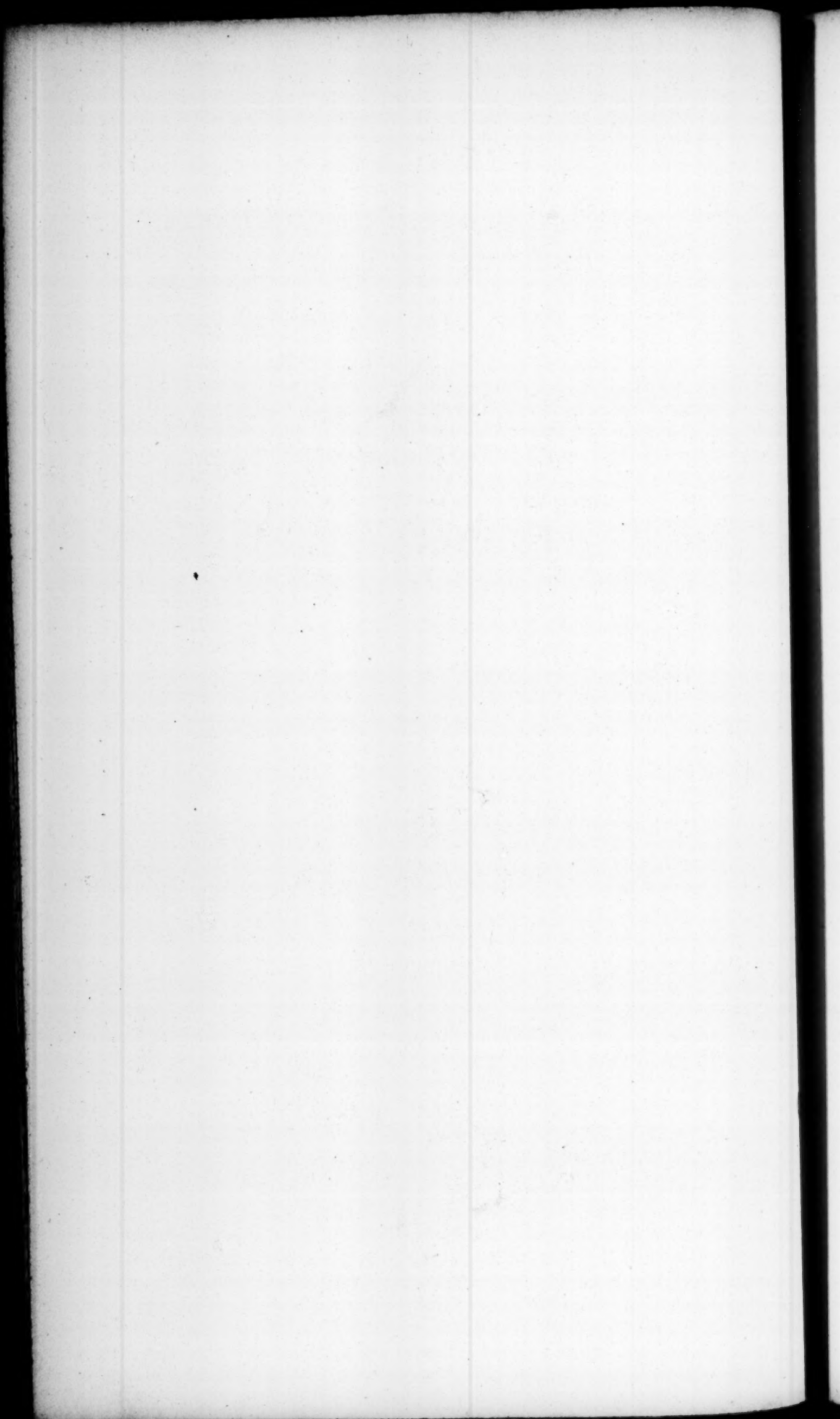
337. General history of the absorbent system.

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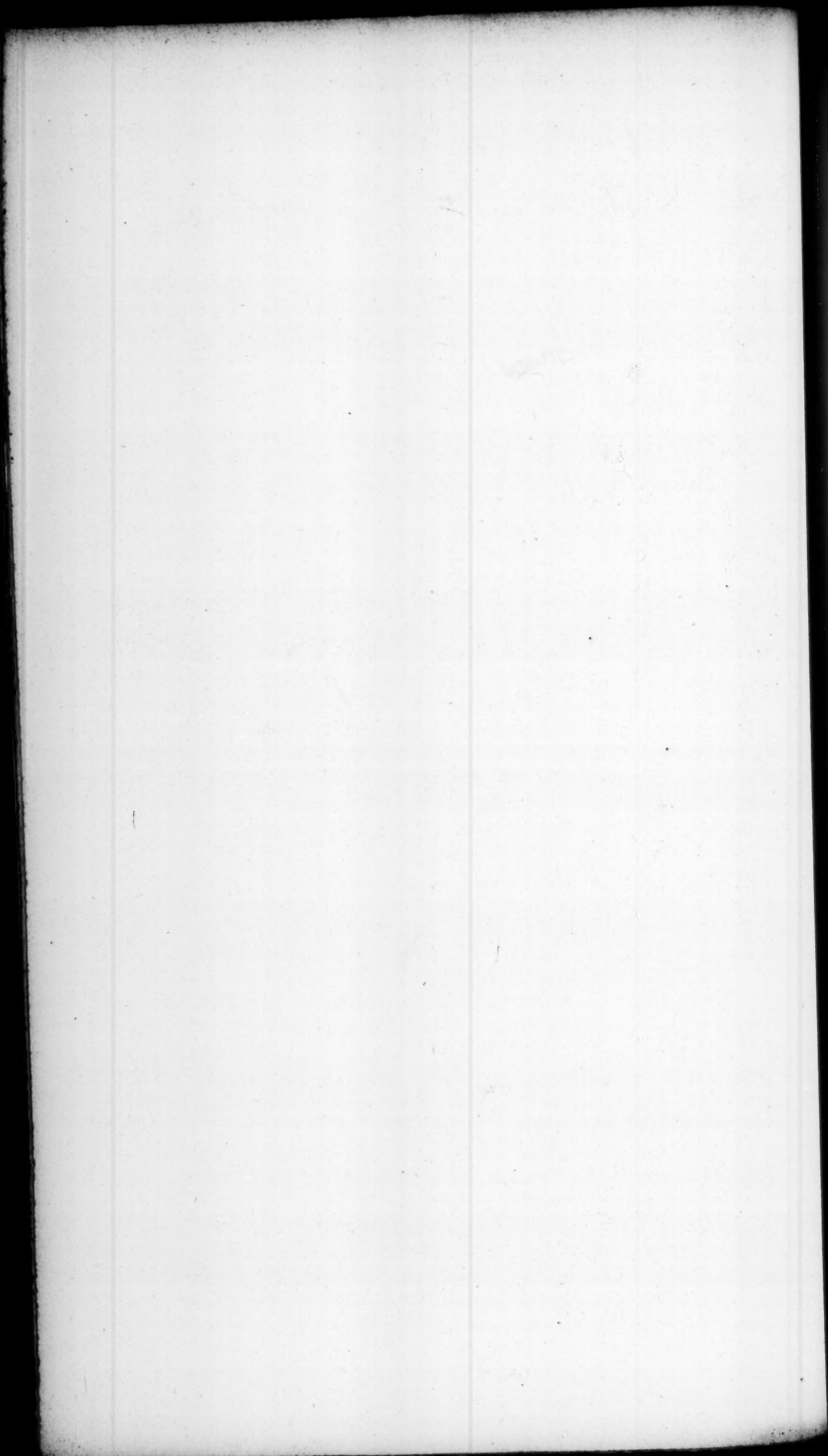
354. Analysis of urine.

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355. Remarks on the different appearances of this fluid, in various diseases.
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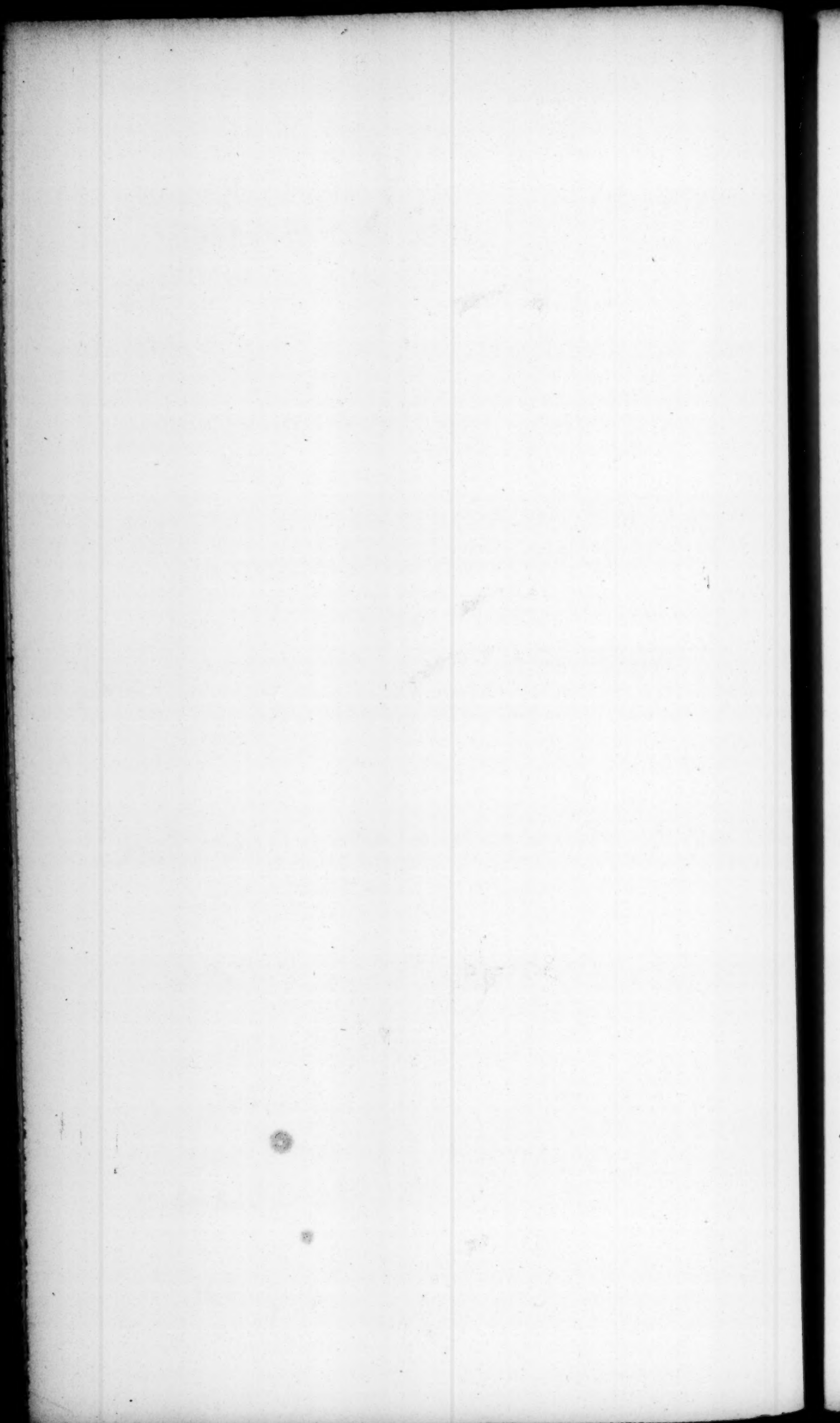
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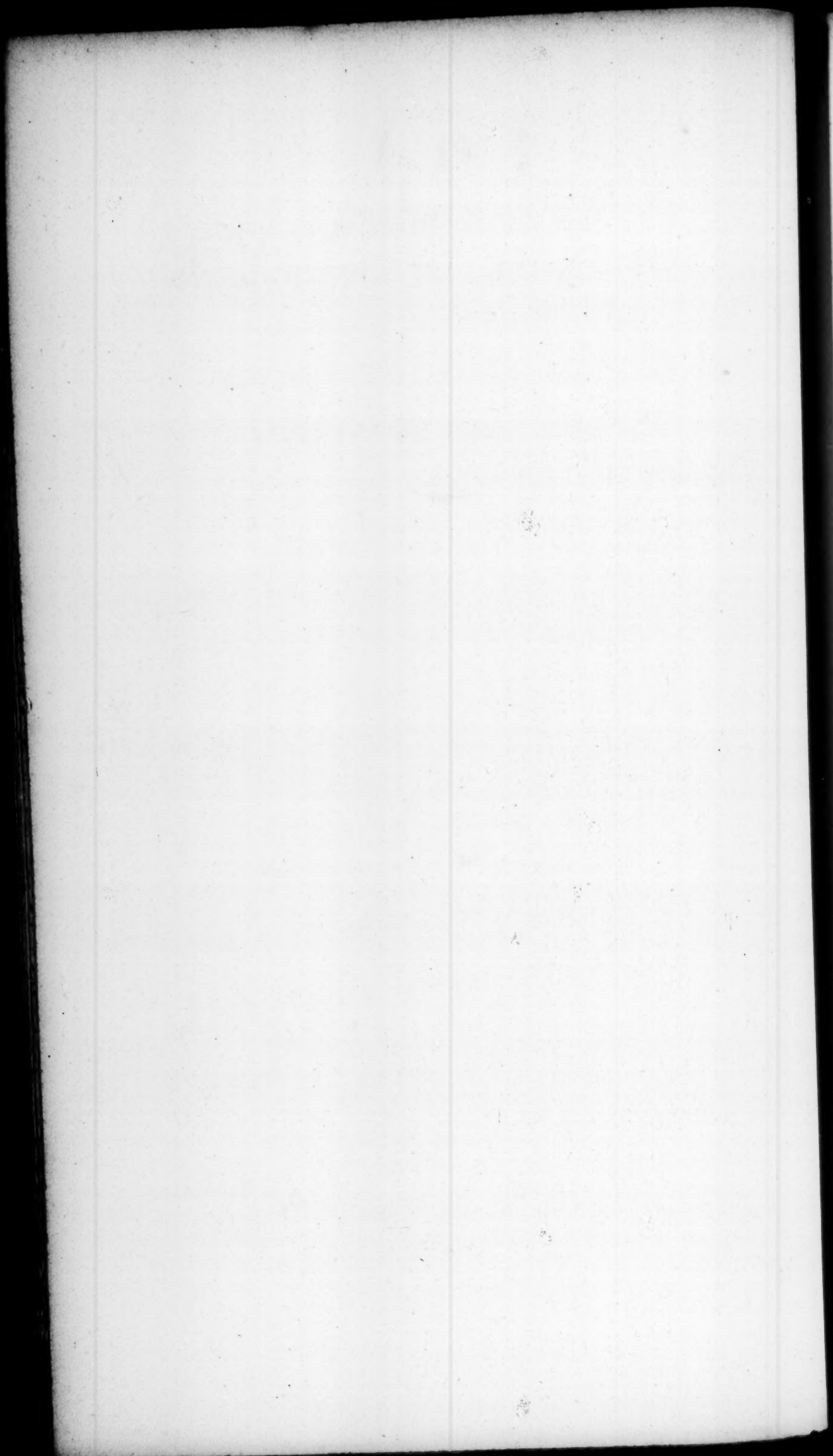
413. Of the diseases of the Uterus, &c.

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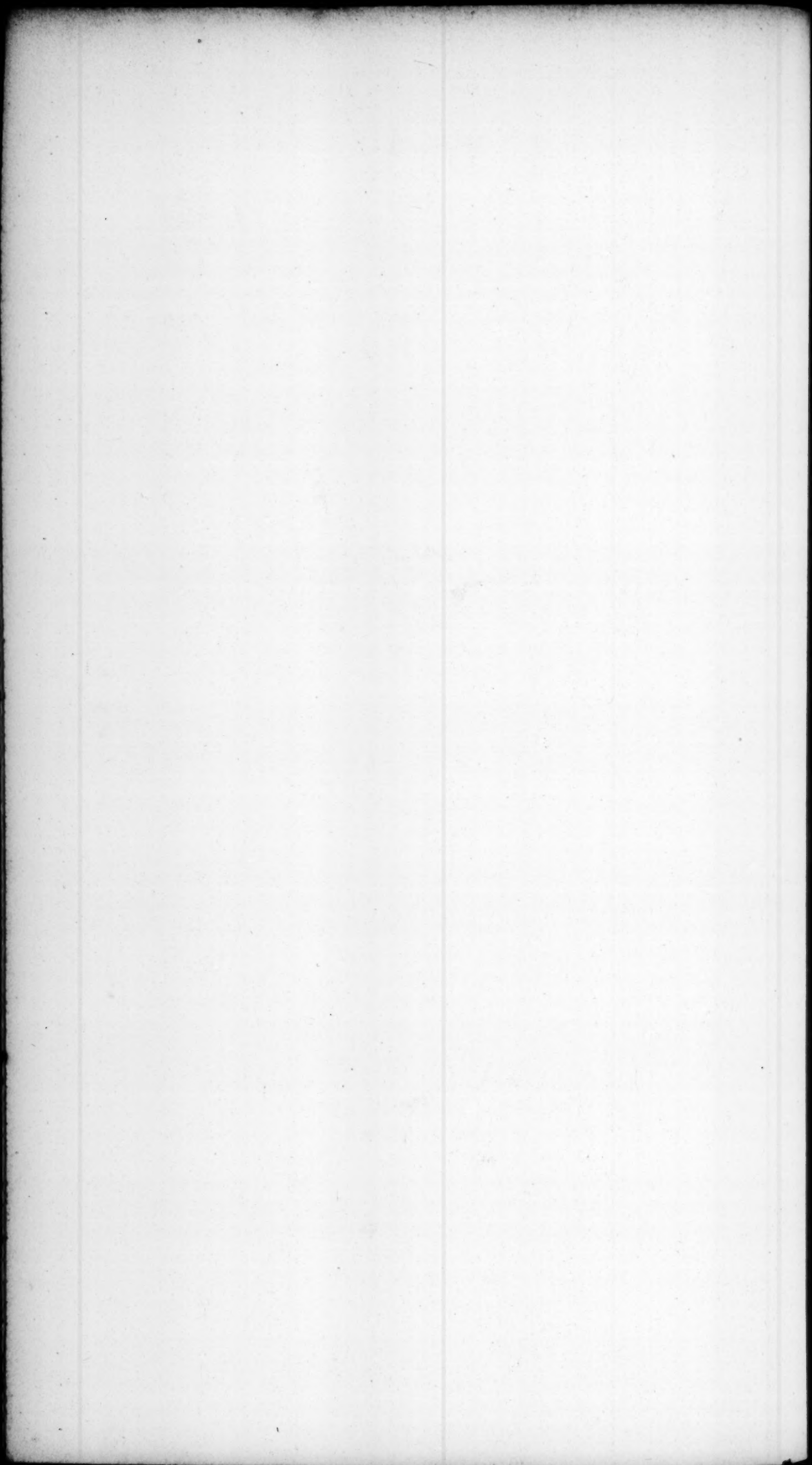
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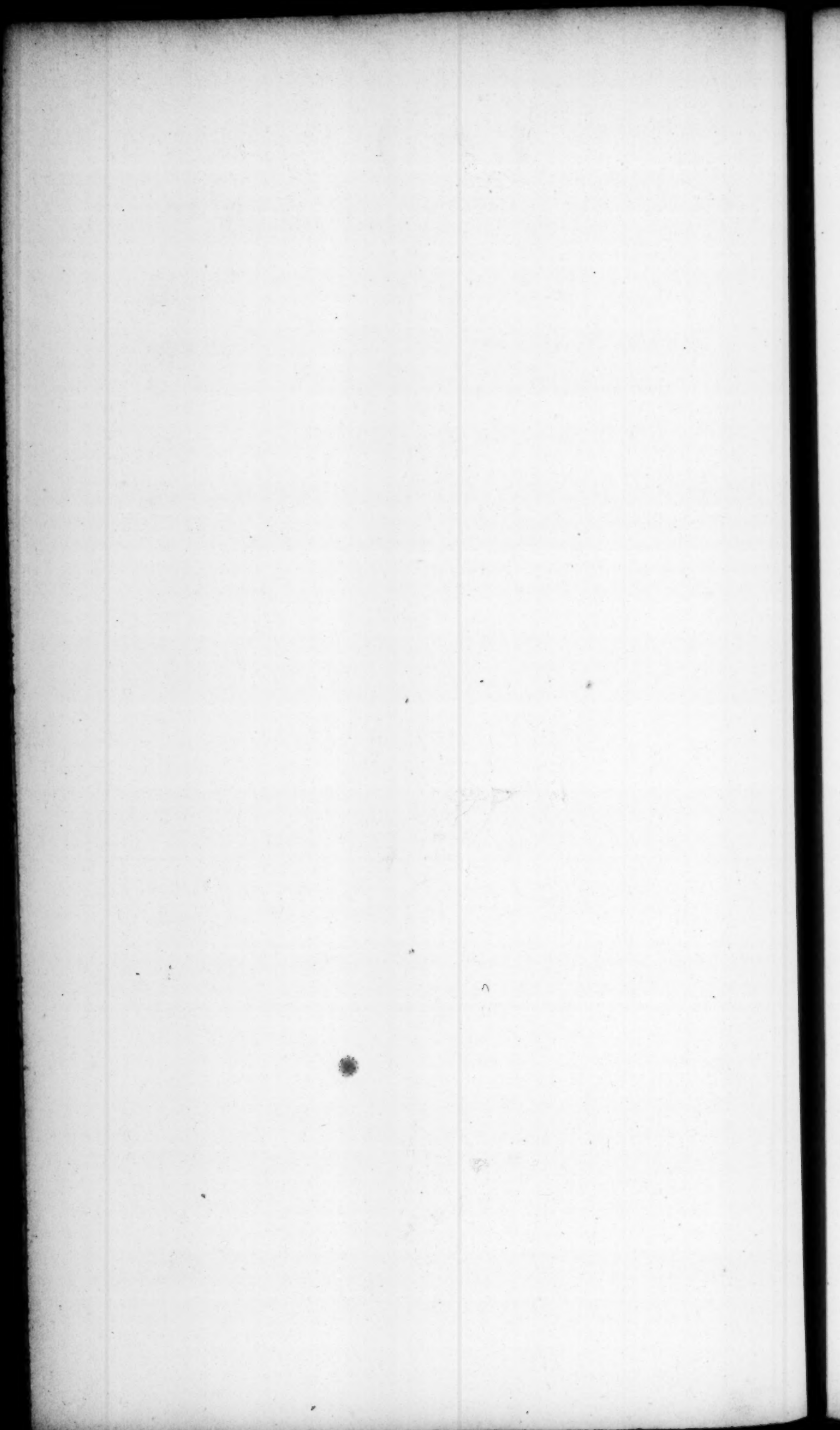
* See Art. 71 to 76.

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460. Of the *olfactory* nerves.

Their passage through the cribriform lamella of the æthmoid bone, and distribution of them over the pituitary membrane.

461. Of the sense of smelling.

462. Of nasal hæmorrhages, *Ozæna*, *Polypus*, &c.

Of

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463. *Of the external parts of the eye.*

Of the structure and use of the eye-brows.

Of the eye-lids, &c.

464. Of the lachrymal gland, and its excretories.

465. Structure and uses of the *puncta lachrymalia*, *caruncula lachrymalis*, and lachrymal duct.

Of the Globe of the Eye.

466. Of the *Tunica conjunctiva*, or *adnata*.

Of the *Tunica albuginea*.

467. Of the six muscles subservient to the eye.

Explanation of their structure, situation, and action.

Remarks

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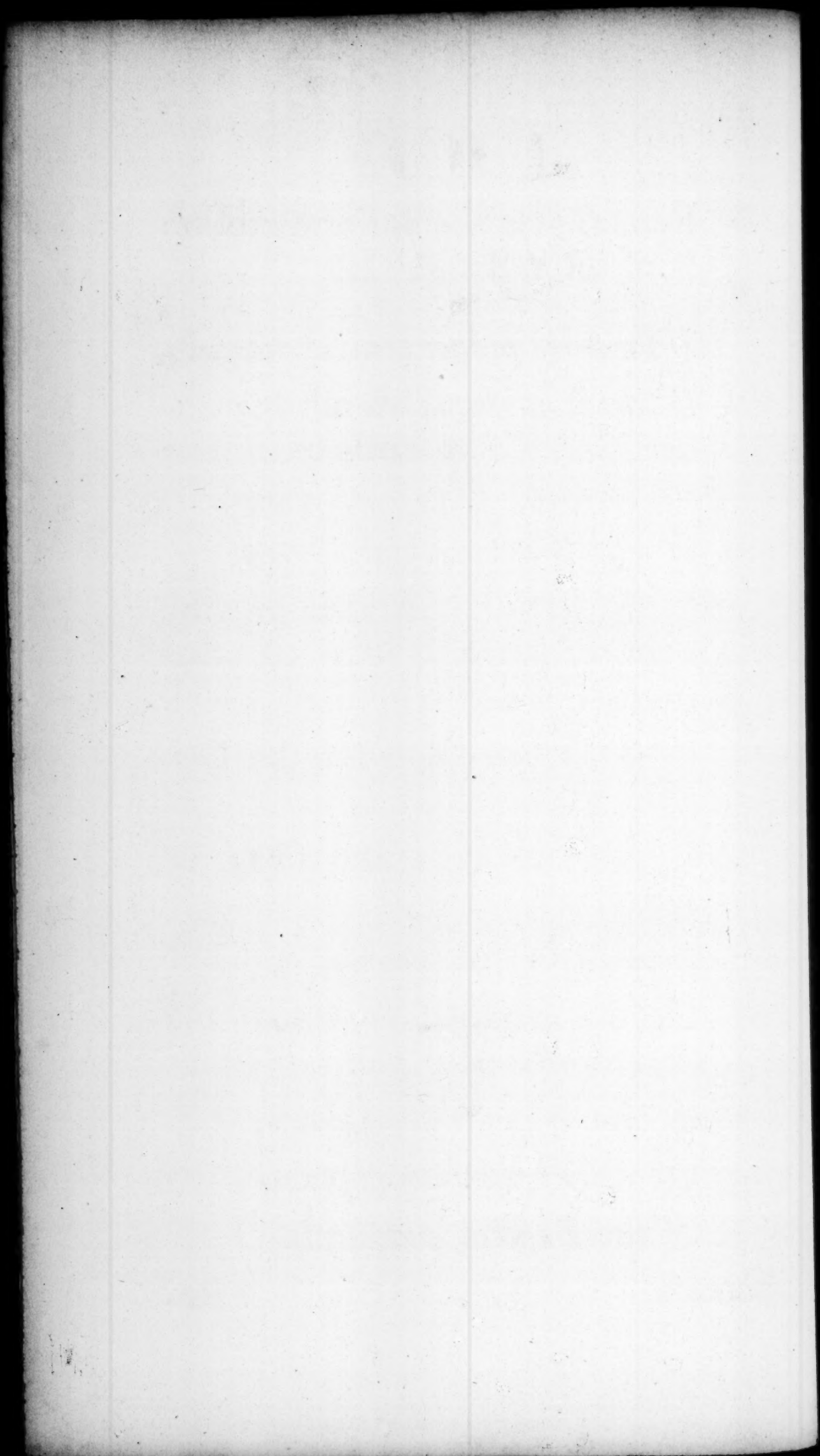
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Remarks on the uniform motion
of the eyes.

Of the three proper coats of the eye.

468. General explanation of the manner in which the coats of the eye are formed.

469. Of the *Sclerotica* and *Cornea*.

Particular examination of the structure and uses of this coat.

Of its connexion with the *Choroides*.

470. Of the *Choroides* and *Uvea* or *Iris*.

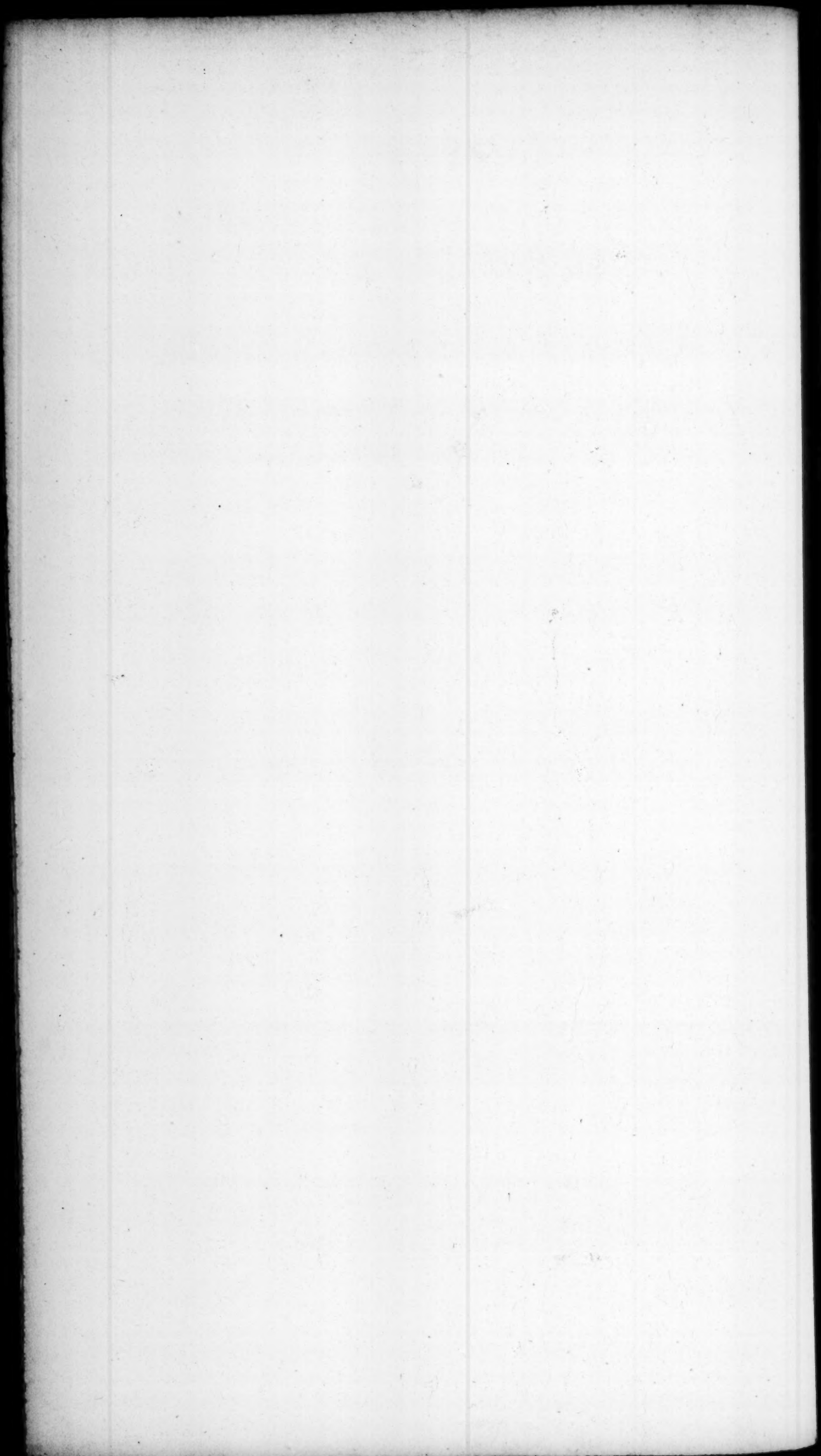
Peculiarities of this coat.

471. Of the manner in which the *Uvea* is formed.

472. Of the *Ligamentum Ciliare*.

473. Of the *Pigmentum nigrum*.

474. Of the *Pupil*.



Remarks on the uniform motion
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472. Of the *Ligamentum Ciliare*.

473. Of the *Pigmentum nigrum*.

474. Of the *Pupil*.

*Remarks on the variety of its structure in different animals.

475. Of the expansion and contraction of the pupil.

Several phœnomena hence accounted for.

476. Of the *Retina* and *Optic Nerve*.

477. The entrance of the optic nerve into the orbit, described.

The opinions concerning the manner in which the optic nerves are conjoined.

478. Of the structure and distribution of the *Retina*.

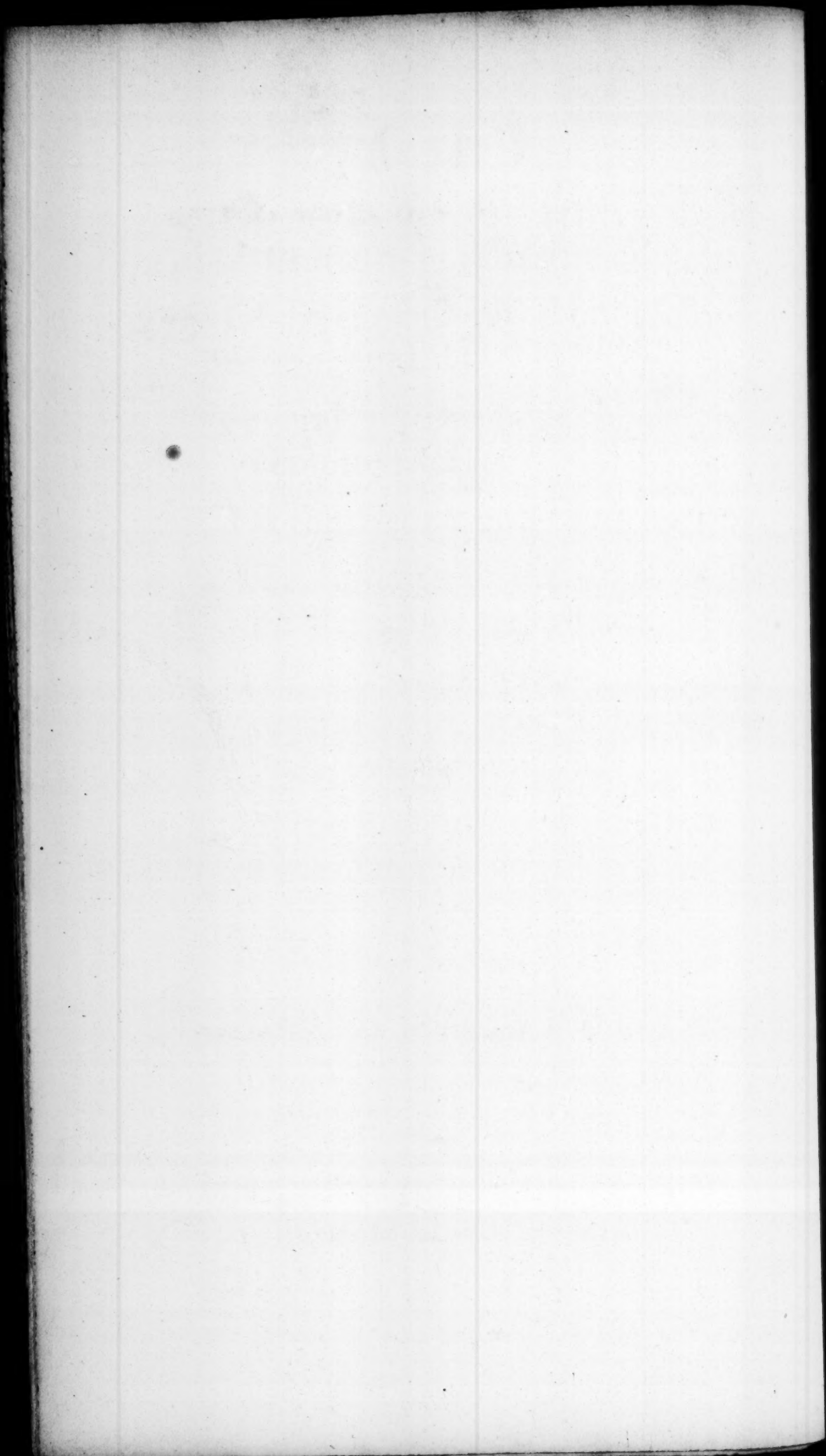
Of the three humours of the eye.

479. General remarks on the situation, transparency, &c. of these humours.

480. Of the Chambers of the eye.

481. Of the *Aqueous Humour*.

Of



Of its different degrees of transparency, at different periods.

Remarks on the effect of the Jaundice upon this humour.

482. Of the evaporation of the aqueous humour ; and the regeneration of it after it has been artificially evacuated.

483. Pathological remarks on the cause of *Hydrophthalmia*.

484. Of the *Crystalline Humour*.

Of the structure and situation of the Crystalline Lens, and its Capsule.

485. Of its shape and density.

Observations on its want of visible attachment, &c.

Different states of it at different periods of life.

486. Of the *Vitreous Humour*.

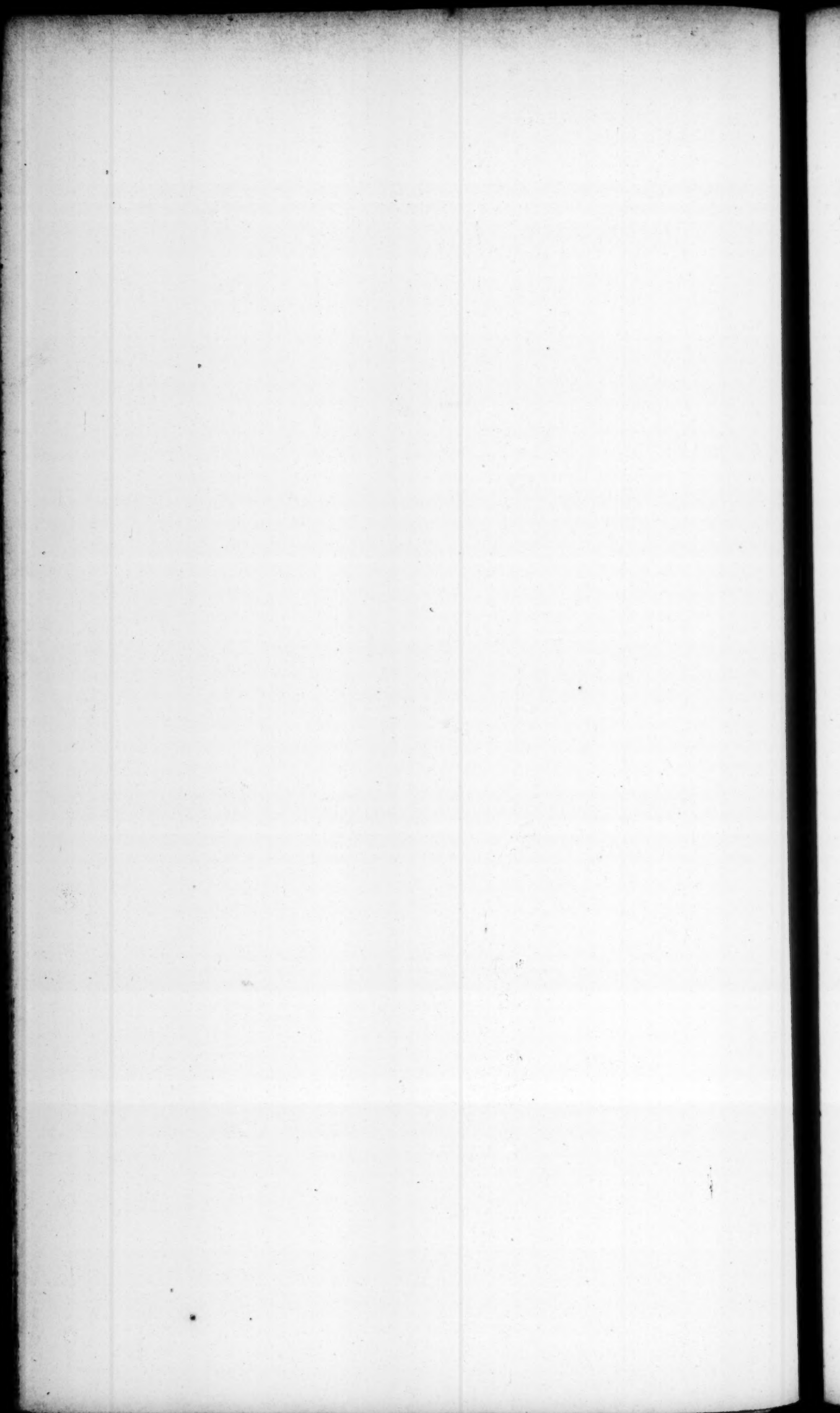
Remarks on the quantity, and density of this humour.

487. Of the cellular structure of the membrane which contains it.
Of the cavity for the lodgement of the crystalline, &c.

Of V I S I O N.

488. Of the refracting powers, &c. of the different humours of the eye.
489. Of the respective uses of the three coats of the eye.
490. Observations on the use of the *ligamentum ciliare*.
491. Of the change produced in the eye, that objects may appear distinct at different distances.
492. Of the manner in which the pictures of objects are formed upon the Retina.
493. Of the *punctum cæcum*, and MARIOTTE'S experiment to prove the insensibility of the Retina at that part.
494. Dispute

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494. Dispute betwixt MARIOTTE and PEQUET concerning the seat of vision.

495. Of the causes and effects of the contraction and dilatation of the pupil.

Why we see best from a dark place to a light one, and *vice versa*.

496. Observations on the use of the *pigmentum nigrum*.

Why some people see better in the dark than others, &c.

Several other phænomena accounted for.

497. Remarks on the cause of *Myopia*, or short sight.

498. Of *Presbyopia*, or weak sight.

Observations on the use of glasses to remedy the above imperfections.

499. Of *Cataract*.

Of

Of couching, and the manner of performing that operation.

500. Of the various causes of *squinting*, and its usual remedies.

501. Of other diseases of the eye, and the methods of treating them.

Of the TEGUMENTS of the Body.

502. Of the *Cuticula* or *Epidermis*.

Its structure and office.

Of its speedy regeneration.

503. Remarks on the operation of blisters.

504. Of the *rete mucosum*.

Its situation and use.

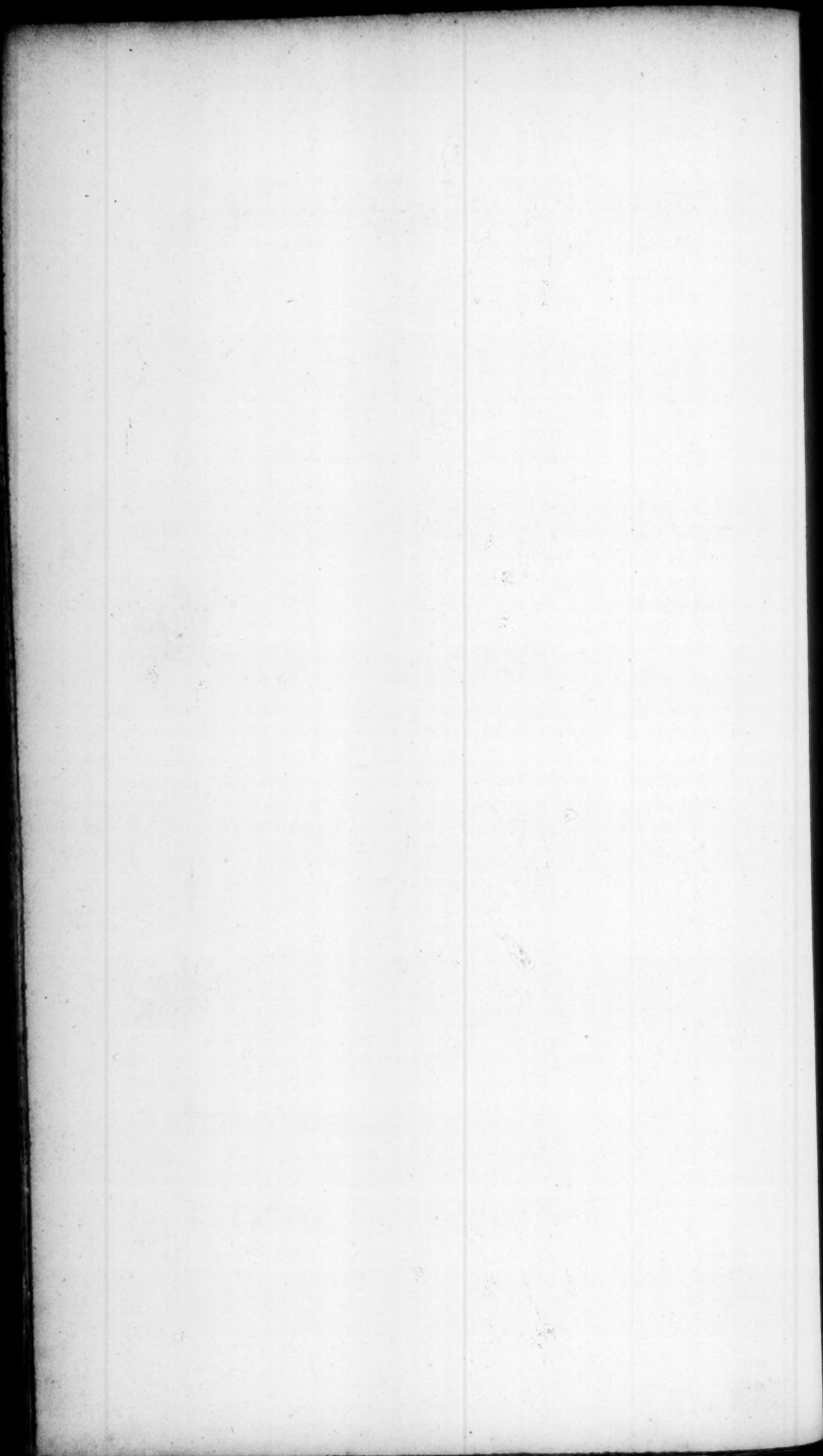
505. Observations on the cause of the black colour of Negroes, &c.

506. Of the *Cutis* or *Skin*.

Its structure in general.

507. Of the papillæ of the skin.

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508. General remarks on the sense of
FEELING.
509. Of insensible transpiration.
510. Of the *glandulæ miliares*.
511. Of the perspirable matter.
Of its secretion, passage, and
escape from the body.
512. Of the quantity of this evacuation.
Experiments of SANCTORIUS, and
others.
513. Of the cutaneous Lymphatics
and of absorption from the surface
of the skin.
514. Observations on the use of nutritive
baths.
515. Of the *Membrana adiposa*, and
reticular substance.
Their texture and uses.
516. An enquiry into the nature and
use of fat.
517. Observations on the treatment of
Emphysema.
518. Of

518. Of the Nails.

Their structure, use, &c.

519. Of the Hairs.

Manner of their growth and receiving nourishment.

Of their general utility.

520. Of the *alopecia*, and *plica polonica*.

521. Observations on the collections of hair found in the stomachs of animals, and in some abscesses, &c.

522. Of the supposed integuments of the antients.

523. RECAPITULATION of the principal phœnomena of the animal œconomy, which have been taken notice of in the preceding lectures.

CONCLUSION.

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COMPARATIVE ANATOMY.

INTRODUCTION.

1. OF the utility of comparing the structure of man with that of animals.

Of the use of comparative anatomy in reading antient authors, and its importance in the study of *Zoology*, &c.

2. Observations on the comparative size and strength of animals.
3. Of the general analogy observable in the structure of animals.
4. Of the division of animals into classes.

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5. Of QUADRUPEDS.
6. Remarks on the peculiarities in the skeletons of different quadrupeds.
7. Observations on the structure, and uses of the tails of various animals.
8. Of the Panniculus Carnosus.
9. Of the situation of the heart compared with that of the same organ in the human species.
10. Of the brain and nerves of quadrupeds.
11. Of the *rete mirabile*, or plexus of blood vessels on each side of the *fella turcica*.
Reflections on the use of this plexus.
12. Of the NOSE of quadrupeds.
Of its internal structure, and of the passage, and distribution of the olfactory nerves.

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Remarks on the cause of the acute sense of smelling in various animals.

13. Of the EARS.

Of the variety in the shape, situation and uses of the external ear.

14. Of the EYE.

Its structure in different animals.

Of the *musculus suspensorius*.

15. Of the membrana nictitans.

16. Of the figure of the pupil in different animals.

Of its extreme dilatability in some animals, as in the cat, &c.

17. Of the different colours of the choroid coat, or *Tapetum*, in different animals.

Why certain animals are enabled to see with very little light.

18. Of the structure of the TEETH in various animals.

Of the difference between the teeth of granivorous, and those of carnivorous animals.

19. Of the want of the *Uvula* in quadrupeds, and the use of the muscle attached to the *Glottis*.

ANATOMY OF A DOG.

20. Of the *Omentum*.

Remarks on the size and extent of the omentum in quadrupeds.

21. Of the chylopoietic viscera.

Of the longitudinal direction of the *valvulae conniventes*.

Structure of the intestines of this animal compared with that of the human intestines.

22. Of the digestion of carnivorous animals.

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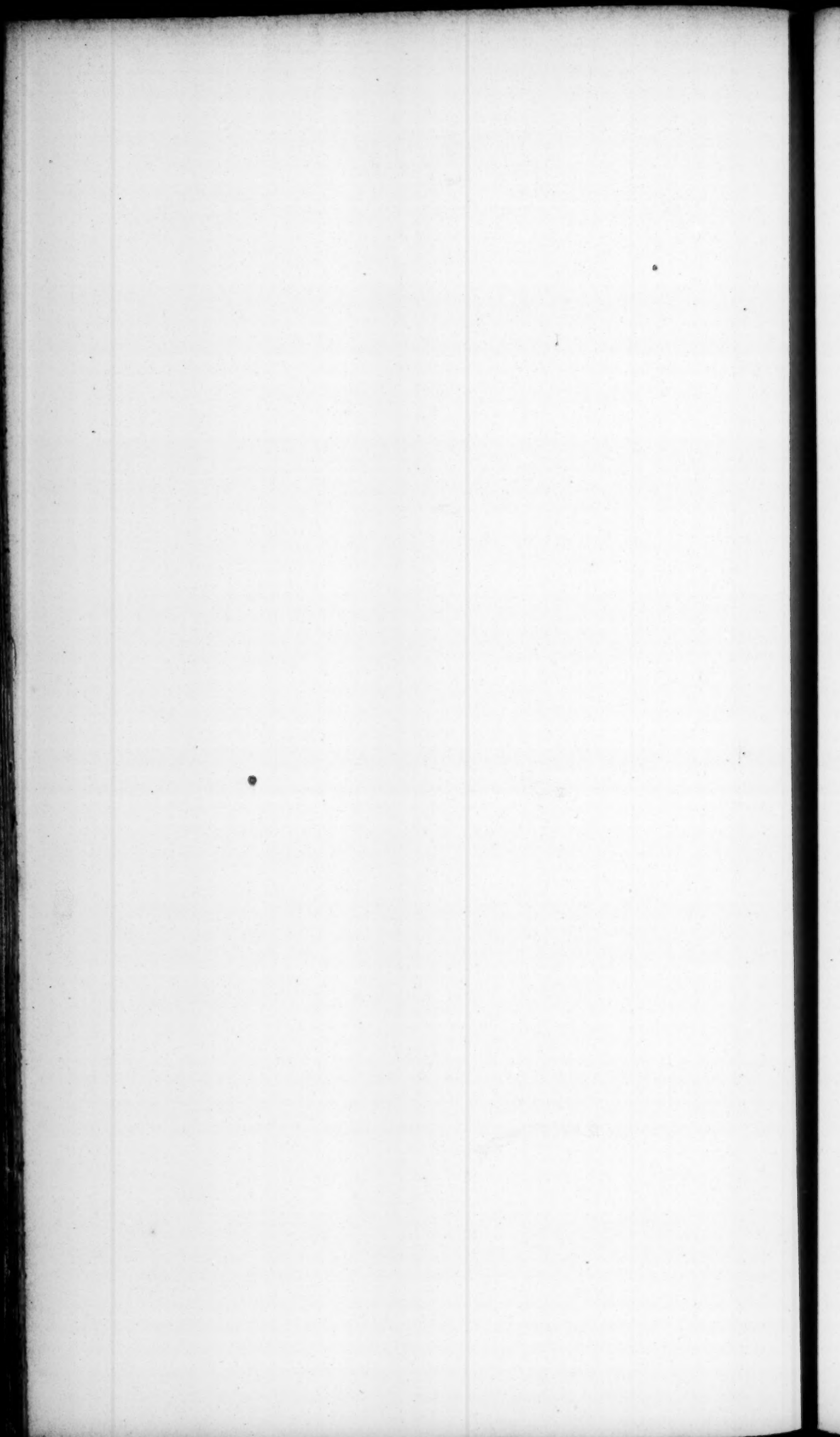
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Remarks on the size of the *Appendix Vermiformis*.

Of the *Pancreas Afellii*.

Of the bags found at the extremity of the rectum.

23. Of the *pancreas*, *spleen*, and *liver* of this animal.

24. The kidneys and urinary bladder, compared with the same parts in the human subject.

25. The openings in the *abdomen* for the passage of the testes to the scrotum, compared with the abdominal rings in men.

26. Of the male parts of generation.

Of the want of *vesiculæ seminales* in the dog.

Remarks on the tedious copulation of this animal.

27. Of the female parts of generation,

28. Of

28. Of the defect of sensible perspiration in this species.

29. Remarks on the cause and prevention of the *Rabies canina*.

Of the *Hydrophobia* and the attempts to cure this disease.

30. Of the peculiarities observable in the anatomy of a HORSE.

31. Of the course of the principal blood vessels, &c.

32. Remarks on some of the most common diseases of horses.

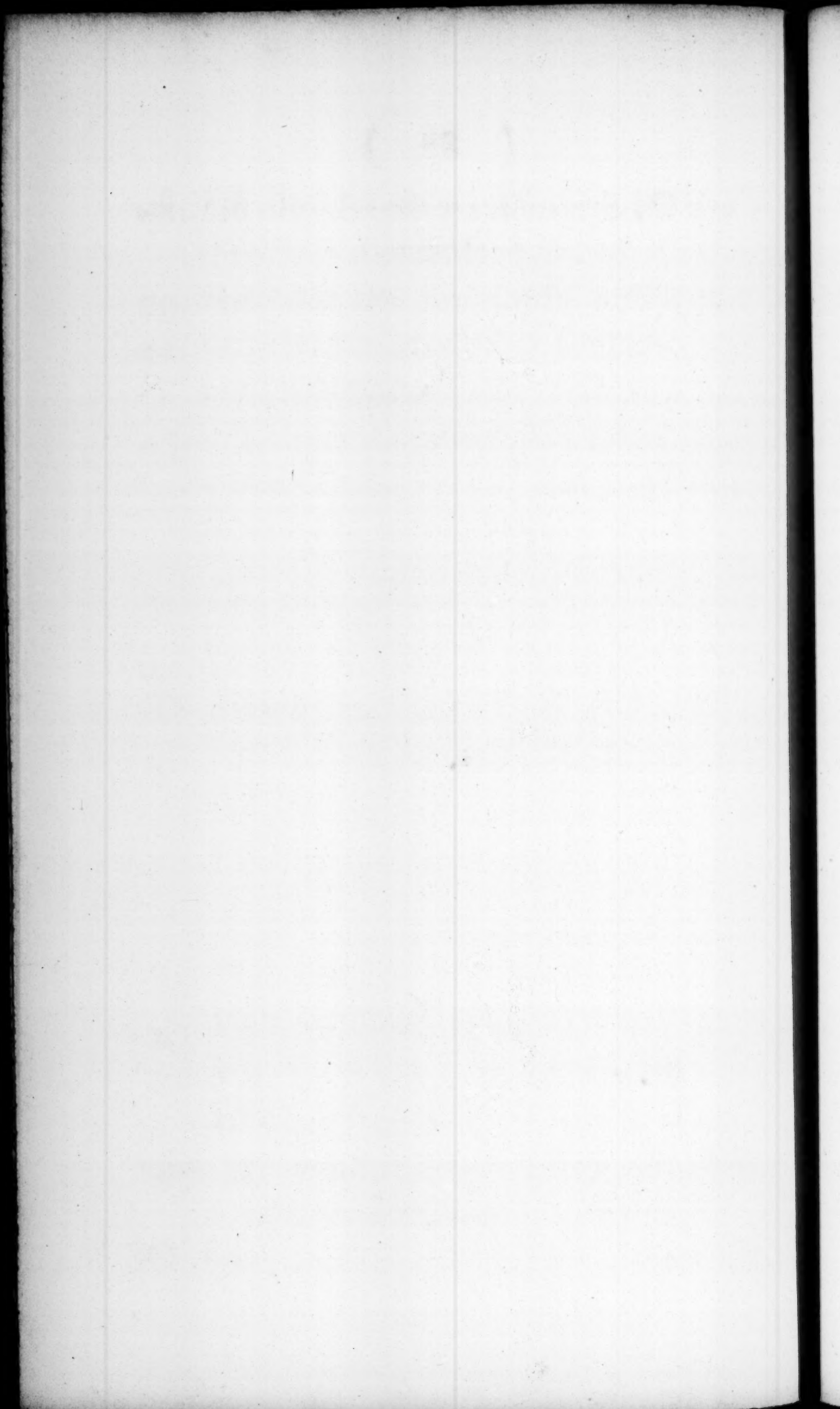
OF RUMINANT ANIMALS.

33. *Of the four stomachs of ruminant animals, compared with the single stomach of other quadrupeds.

Of

* All ruminant animals have more than one stomach.

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Of the manner in which rumination is performed.

Why ruminant animals require less food than other granivorous quadrupeds, who have but one stomach.

34. Of the parts of generation of a cow.

Of the *Uterus* and its *Cornua*.

35. Of the Foetus.

36. Of the *Urachus* and *Allantois*, or reservoir of urine peculiar to the foetus of quadrupeds.

OF BIRDS.

37. General remarks on this class of animals.

38. Of the peculiarities in the skeletons of birds.

39. Of the stomach and intestines of the carnivorous, compared with those of granivorous birds.

40. Of

40. Of the *succus gastricus*, and the digestive faculties of the carnivorous tribe.
42. Of the *ventriculus succenturiatus*, and gizzard.
43. Of the triturating power of the gizzard, and the manner in which their food is digested.
44. Of the absorbent system in birds.
45. Of the kidneys and passage of the urinary secretion.
46. Of the extent and attachment of the lungs.
Of their communication with the abdominal vesicles, and the air cells in the bones of these animals.
47. Of the Diaphragm.
48. Of the brain compared with that of quadrupeds.
49. Of the olfactory nerves, and the organ of smelling.
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50. Of the eye, and its peculiarities in this class of animals.

Of the *Marsupium nigrum*, or *Bourse noire*.

51. Of the organ of hearing in birds.

52. Of the organs of generation in the male.

53. Of the organs of generation in the female.

Of the vitellarium, infundibulum, &c.

54. Of the phœnomena attending the passage of the egg to the uterus.

55. Structure of an egg explained.

56. Of the progressive changes which the egg undergoes during incubation.

Of the nourishment of the foetus of oviparous animals.

57. *Of the secretion in the crops of breeding pigeons for the nourishment of their young.

OF AMPHIBIOUS ANIMALS.

58. Of the heart and lungs of amphibia.

Of the peculiarities in the structure of these organs.

59. Of the transverse canals in the septum between the ventricles, exemplified in the heart of a turtle.

Of the use of these canals.

60. Why all the arteries proceed from the right ventricle.

61. Description of the circulation of the blood in this class of animals.

62. Ob-

* See a Dissertation on this subject, and also an account of the Air Cells in the Bones of Birds; in Observations on certain parts of the Animal Economy, lately published by Mr. J. Hunter.

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62. Observations on the *pulmo arbitrarius* enjoyed by them.
63. General remarks on the structure of *serpents*.
64. Of the teeth of serpents, and their canal for the passage of the poisonous fluid.
Of the reservoir in which this fluid is contained.
65. Of the general effects of wounds made by the teeth of venomous serpents.
66. Observations on the treatment of persons bit by this species of animals.

OF FISHES.

67. Remarks on the structure and use of the fins, tail, and other external parts.
68. Of the situation, and structure of the teeth of fishes?

69. Of the organs of digestion, and of the chylopoietic canal.

70. Of the swimming bladder and its use.

71. Of the size and structure of the liver.

Of the situation of the gall bladder, and course of the hepatic and cystic ducts, &c.

72. Of the *intestinula cæca*, and their terminations.

73. Of the spleen, &c.

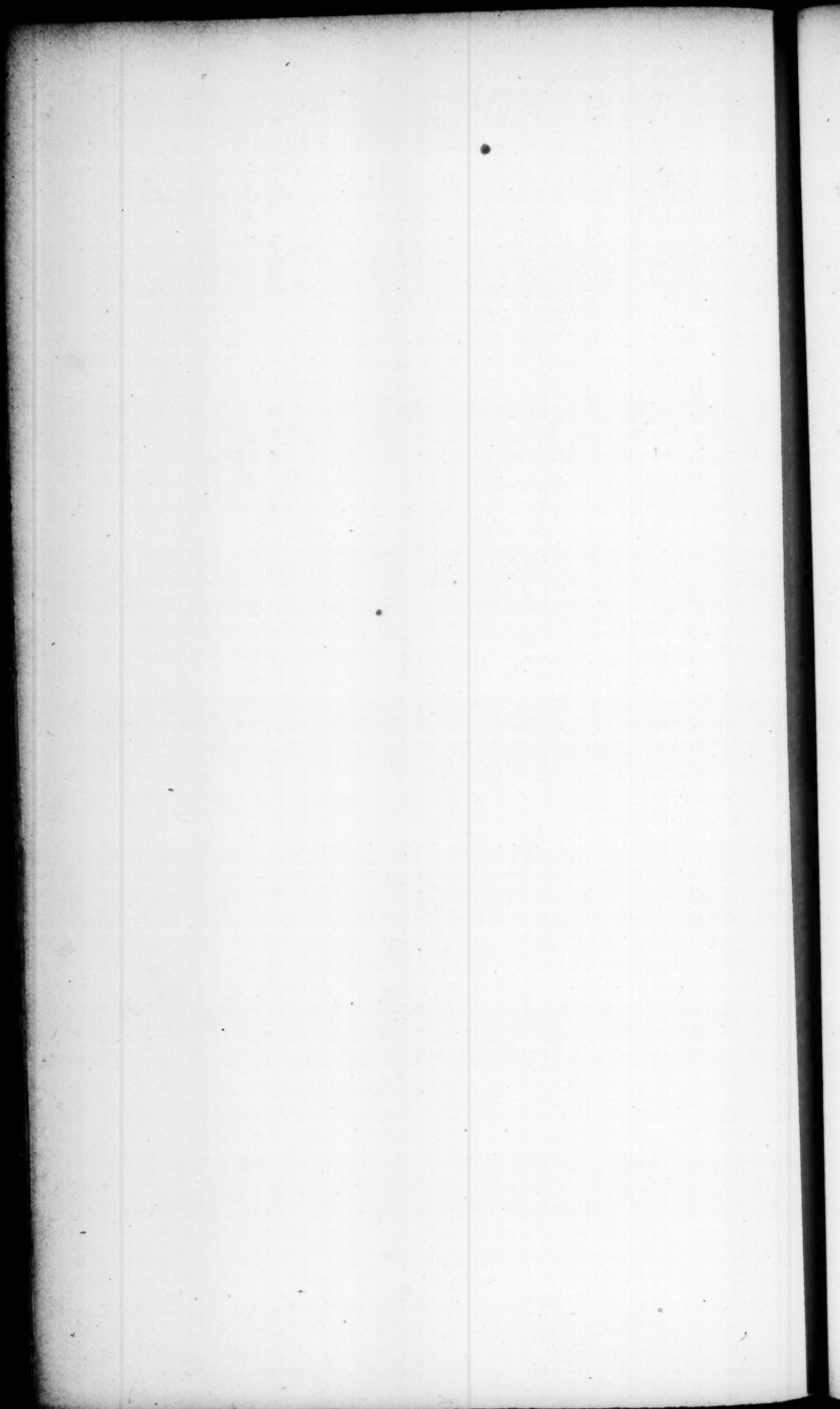
74. Description of the heart, and its vessels.

Of the single form of the heart, being composed of one auricle and one ventricle.

75. *Of the circulation of the blood in this class of animals.

Of

* See a Treatise on the Structure and Physiology of Fishes, published in 1785, by Alex. Monro, M. D. Professor of Physic, Anatomy, and Surgery, in the University of Edinburgh.



Of the passage of the blood from the ventricle of the heart to the gills, by the bronchial artery.

Of the union of the bronchial veins forming trunks, which perform the office of arteries, and convey the blood, (by their ramifications) all over the body.

Of the return of the blood to the heart by the *Venæ cavæ*.

76. Remarks on this mode of circulation, and on the use of the gills.

Observations on the peculiarities of the circulation in the *Sepia Loligo*, or cuttle fish.

77. Of the absorbent system in fishes.

78. Of the Brain and Nerves.

79. Of the organ of smell in fishes.

80. Of the Ear.

81. Its

- 81. Its structure and situation in the cartilaginous and osseous fishes.
- 82. Observations on the faculty of hearing in water.
- 83. Of the eye.
Peculiarities of the crystalline, &c.
- 84. Of the *mucus ducts*, and the secretion of the liquor for the lubrication of the external surface of fishes.
- 85. Of the parts of generation in the cartilaginous and osseous fishes.
- 86. Of *Insects, Vermes, &c.*

CONCLUSION.

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SCELETI OSSIUM CATALOGUS.

*OS Frontis.		Costæ { Veræ septem.
Os Parietale		{ Spuriæ quinque
Os Temporale		
*Os Occipitis		*Sternum
*Os Ethmoidale		Clavicula
*Os Sphænoidale		Scapula
Os Unguis		Os Humeri
Os Nasi		Ulna
Os Malæ		Radius
Os Maxillare		
Os Spongiosum inferius		
Os Palati		
*Vomer		
*Maxilla inferior		
Dentes { Incisores		Offis Carpi { Scaphoides
{ Canini		{ Lunare
{ Molares		{ Cuneiforme
		{ Pisiforme
		{ Trapezium
		{ Trapezoides
		{ Magnum
		{ Unciforme
*Os Hyoides		Offa Metacarpi
Officula { Stapes		Offa Digitorum quindecim
Auditus { Incus		Os Femoris
{ Malleus		Tibia
{ Os Orbiculare		Fibula
		Patella
*Vertebræ { Colli septem		
{ Dorsi duodecim		
{ Lumborum quinq.		Offa Tarfi { Astragalus
		{ Os Calcis
*Os Sacrum		{ Os Naviculare
*Os Coccygis		{ Offa Cuneiformia
		{ Os Cuboides
Os Innominatum ex { Ilio		Offa Metatarfi quinque
{ Ischio		Offa Digitorum Pedis quatuor-
		{ Pube
		{ decim

MUS.

Those bones which are single in the skeleton, have no asterisk before them,—the rest are in pairs.

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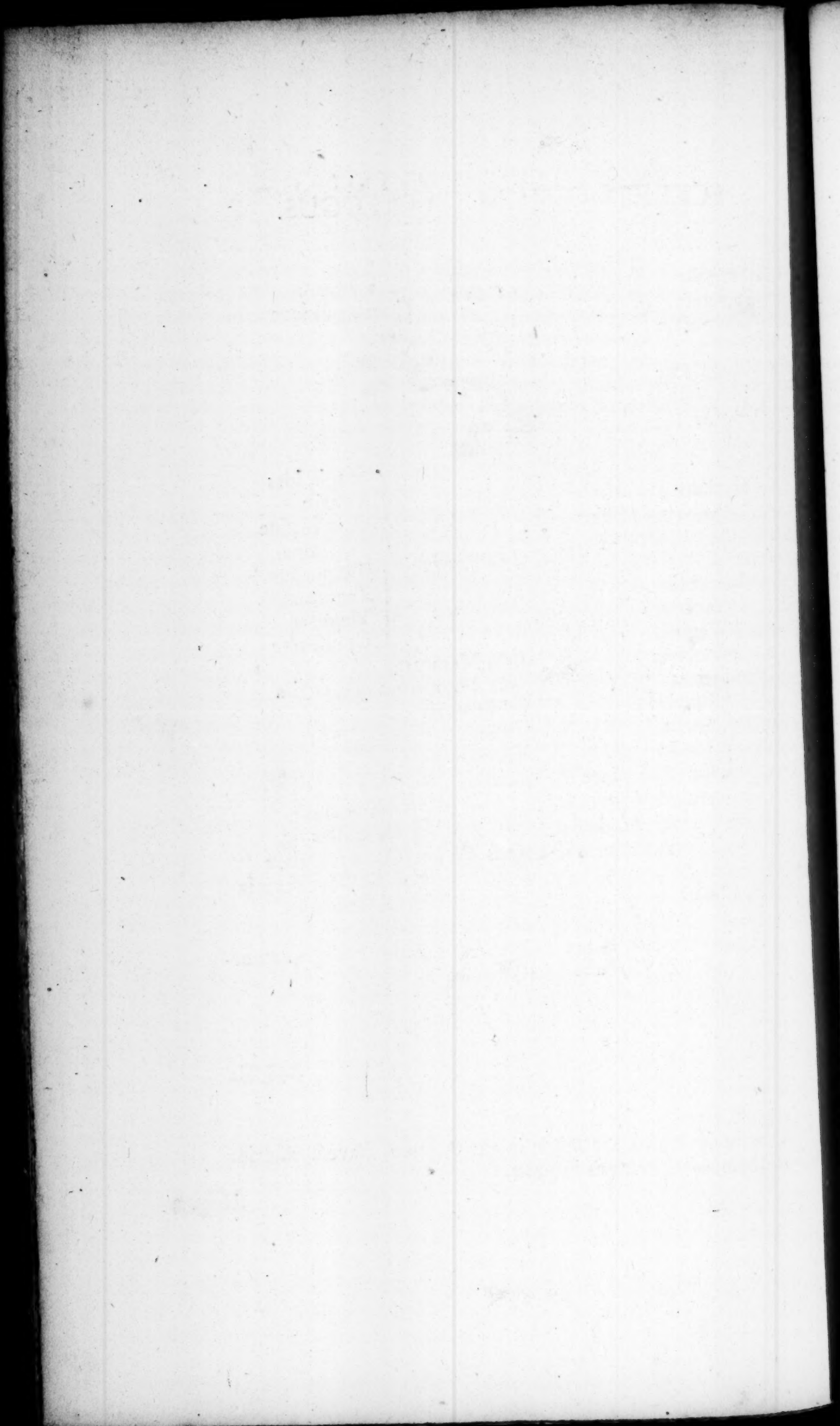
SCELETI OSSIUM CATALOGUS.

*OS Frontis.		Costæ { Veræ septem.
Os Parietale		{ Spuriæ quinque
Os Temporale		*Sternum
*Os Occipitis		Clavicula
*Os Ethmoidale		Scapula
*Os Sphænoidale		Os Humeri
Os Unguis		Ulna
Os Nasi		Radius
Os Malæ		
Os Maxillare		Offis Carpi { Scaphoides
Os Spongiosum inferius		{ Lunare
Os Palati		{ Cuneiforme
*Vomer		{ Pisiforme
*Maxilla inferior		{ Trapezium
Dentes { Incisores		{ Trapezoides
{ Canini		{ Magnum
{ Molares		{ Unciforme
*Os Hyoides		Offa Metacarpi
Officula { Stapes		Offa Digitorum quindecim
Auditus { Incus		Os Femoris
{ Malleus		Tibia
{ Os Orbiculare		Fibula
		Patella
*Vertebræ { Colli septem		Offa Tarfi { Astragalus
{ Dorfi duodecim		{ Os Calcis
{ Lumborum quinq.		{ Os Naviculare
*Os Sacrum		{ Offa Cuneiformia
*Os Coccygis		{ Os Cuboides
Os Innominatum ex { Ilio		Offa Metatarfi quinque
{ Ischio		Offa Digitorum Pedis quatuor-
{ Pube		decim

MUS.

Those bones which are single in the skeleton, have no asterisk before them,—the rest are in pairs.

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MUSCULORUM CATALOGUS.

Abdominis	{	Obliquus externus.
		Obliquus internus.
		Transversalis.
		Rectus.
		Pyramidalis.
Frontis et Occipitis.		Occipito-Frontalis.
Superciliorum.		Corrugator.
Genarum	{	Quadratus, five Platysma Myoides.
		Buccinator.
Palpebrarum	{	Orbicularis.
		Aperiens Rectus.
Alarum Nasi	{	Levator.
		Dilator.
		Constrictor five Transversalis.
Labiorum	{	Elevator
		Depressor
		Labii Superioris proprius
	{	Elevator
		Depressor
		Labii Inferioris proprius
	{	Elevator
		Depressor
		Communis.
		Zygomaticus major, et minor.
		Orbicularis.
Auriculam	{	Attollens.
		Retrahens.
Oculorum	{	Obliquus
		Superior, five Trochlearis.
		Inferior.
		Attollens.
		Deprimens.
		Abductor.
		Adductor.
Auris Internæ	{	Externus.
		Internus.
		Obliquus.
		Stapedæus.
Offis Hyoidis	{	Sterno-hyoidæus.
		Coraco-hyoidæus.
		Stylo-hyoidæus.
		Genio-hyoidæus.
		Milo-hyoidæus.

Lingua

Linguae	{	Genio-glossus.
		Stylo-glossus.
		Basio-chondro-cerato Glossus.
		Linguales.
Uvulae	{	Glossio-Staphylinus.
		Pterigo-Staphylinus.
		Pharyngo-Staphylinus.
		Levator, five Salpingo-Staphylinus.
Pharyngæus.		
Oesophagæus.		
Laryngis	{	Sterno-thyroidæus.
		Hyo-thyroidæus.
		Crico-thyroidæus.
		Crico-Arytenoidæus { posticus.
		{ lateralis.
		Arytenoidæus major, et minor.
Maxillæ Inferioris	{	Thyro-Arytenoidæus.
		Temporalis.
		Masseter.
		Digastricus.
Pterigoidæus externus, et internus.		
Thoracis	{	Serratas Anticus major, et minor.
		Subclavius.
		Scalenus.
		Triangularis Sterni.
		DIAPHRAGMA.
		Intercostales externi, et interni.
		Serratus Posticus superior, et inferior.
Scapulæ	{	Trapezius, five Cucullaris.
		Rhomboides.
		Levator, five Musculus Patientiæ.
Capitis	{	Splenius.
		Complexus.
		Rectus Posterior, major, et minor.
		Obliquus superior, et inferior.
		Sterno-mastoidæus.
		Trachelo-mastoidæus.
		Rectus Anterior { major.
Colli	{	{ minor.
		{ lateralis.
		Longus.
		Spinalis.
		Semispinalis.
		Transversalis.
Colli	{	Inter-spinales.
		Inter-transversales.

- Dorsi { Sacrolumbalis.
Longissimus.
- Lumborum { Quadratus.
Sacer.
Psoas Parvus.
- Coccygæus.
- Humeri { Pectoralis.
Deltoides.
Supra-spinatus.
Infra-spinatus.
Teres minor, et major.
Latissimus Dorsi.
Coraco brachialis.
Subscapularis.
- Humeri { Biceps Flexor.
Brachialis internus.
Biceps extensor, five Gemellus.
Brachialis externus.
Anconæus.
- Volæ Manus. Palmarus longus, et brevis.
- Radii { Supinator longus, et brevis.
Pronator Teres, et quadratus.
- Carpi { Flexor, Radialis, et Ulnaris.
Extensor, Radialis, et Ulnaris.
- Digitorum Communes { Extensor.
Flexor { Sublimis, five perforatus.
Profundus, five perforans.
Lumbricales.
Interossei.
- Indicis { Indicator.
Adductor proprius, et communis.
- Digitum minimi { Abductor.
Primi internodii flexor.
Extensor.
- Pollicis { Flexor internodii primi, secundi, et tertii five longus.
Extensor internodii primi, secundi, et tertii.
Abductor.
Adductor, proprius et communis.
- Flexor Ossis Metacarpi, minimum Digitum sustinentis.
- Femoris { Psoas magnus.
Iliacus internus.
Pectineus.
Gluteus magnus, medius et minimus.
Triceps Extensor.
Iliacus Externus, five pyriformis.
Gemelli.
Obturator externus, et internus five Marsupialis.
Quadratus.

- Cruris { Membranofus.
 Sartorius.
 Gracilis.
 Bracilis.
 Biceps Flexor.
 Seminervofus
 Semimembranofus.
 Rectus.
 Vastus externus, et internus.
 Crureus.
 Poplitæus.
- Tarfi { Tibialis Anticus.
 Gastrocnemius, ubi *Tendo Achillis*.
 Plantaris.
 Soleus.
 Peroneus longus et brevis.
 Tibialis Posticus.
- Digitorum Pedis { Extensor longus, et brevis.
 Flexor Perforatus, et Perforans.
 Lumbricales.
 Interossei.
- Pollicis Pedis { Extensor longus, et brevis.
 Flexor longus, et brevis.
 Abductor.
 Adductor.
- Transversalis Pedis.
- Digiti Minimi { Flexor Proprius.
 Abductor.
- Penis { Erectores.
 Acceleratores Urinæ.
 Transversalis.
- Clitoridis, Erector.
- Vaginæ Sphincter.
- Ani { Levatores.
 Sphincter.

F I N I S.

